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The Use of DNA by the Criminal Justice System and the Federal Role: Background, Current Law, and Grants

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SUMMARY

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The Use of DNA by the Criminal Justice System and the Federal Role: Background, Current Law, and Grants

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 many sources, such as hair, bone, teeth, saliva, and blood. DNA samples can be collected at crime scenes, from people who might have been present when the crime occurred, and from crime victims. The information obtained from these samples is then compared with other DNA profiles to both eliminate and identify suspects in a criminal investigation.

In the 1980s, states began enacting laws that required the collection of DNA samples from offenders convicted of certain sexual and other violent crimes. The samples are analyzed and their profiles are entered into state databases. In the late 1980s, 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. In 1994, federal law (34 U.S.C § 12592(a)) authorized the FBI to operate and maintain a national DNA database for DNA profiles collected from people under applicable legal authority and samples collected at crime scenes. In 1998, the FBI launched the National DNA Index System (NDIS).

Statutory provisions authorize the collection of DNA samples from certain arrestees and convicted federal offenders, District of Columbia offenders, and military convicted offenders. State laws dictate which convicted offenders, and in some states arrestees, 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 and the mandatory collection of DNA from arrestees and convicted offenders has resulted in increased demand for DNA analysis, which has resulted in a backlog of casework. In addition to solving crimes, DNA analysis can also help exonerate people accused or convicted of 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. 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 many sources, such as hair, bone, teeth, saliva, and blood. Because there is DNA in most cells in the human body, even a minuscule amount of bodily fluid or tissue can yield useful information. Obtaining a DNA sample is not complicated; it can be as simple as a swab of the inside of the mouth to obtain cheek cells and white blood cells in saliva.

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

- If 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 or she committed the crime.
- If a suspect is not known, biological evidence from the crime scene can be analyzed and compared to offender profiles in existing DNA databases to assist in identifying a suspect. 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 exonerate innocent people of crimes they did not commit.[1] It also reviews current law related to 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, providing post-conviction DNA testing, and promoting new technology in the field.

Background

Federal law authorizes the Federal Bureau of Investigation (FBI) to operate and maintain a national database of DNA profiles collected from people under applicable legal authority and samples of biological evidence collected at crime scenes. Statutory provisions authorize the federal government to collect DNA samples and enter profiles from certain convicted federal offenders and arrestees, District of Columbia offenders, and military offenders. State law dictates which arrestees and convicted offenders 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. This means that there may be arrestees and convicted offenders whose DNA qualifies for inclusion in a state database but will not qualify for inclusion in the national database. The intended purpose of the national DNA database is to compare offender profiles to

[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*.

crime scene samples in a central repository of DNA profiles to generate leads in criminal investigations.

Increased awareness of the power of DNA testing to solve crimes and the mandatory collection of samples from arrestees and convicted offenders has led to increased demand for DNA analysis and casework backlogs. In addition to solving crimes, DNA analysis can also help exonerate people convicted of crimes they did not commit.

A Brief Primer on DNA

DNA is contained within the nucleus of most cells in the human body.[2] A cell's nucleus contains 23 pairs of chromosomes (46 total) and each chromosome contains long strands of DNA.[3] Genes are specific segments of these DNA strands.[4] Different genes are comprised of different lengths of DNA. A gene's locus is the location of the particular section of DNA that makes up a given gene. Genes, or groups of genes, provide the code for inherited traits such as eye color. There are different variations of any given gene (e.g., genes for blue eyes or brown eyes), and these variants are called alleles. The full set of DNA for any given person is their genome.

Genes can be broken down into coding and non-coding genes.[5] Coding genes make up a little more than 1% of the human genome, and these contain DNA which codes for proteins that are eventually assembled into cells, tissues, and organs.[6] Non-coding genes comprise the remainder of the human genome and handle vital functions such as regulating gene activity.[7] Currently, the FBI collects 20 loci for non-coding genes; each locus contains one or two alleles, and thus an FBI DNA profile could include up to 40 alleles.[8]

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

In the 1980s, states began enacting laws that required the collection of DNA samples from offenders convicted of certain sexual offenses and other violent crimes. The samples were then analyzed and their profiles entered into state databases to identify suspects in criminal investigations. In the late 1980s, 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 working group proposed guidelines that are the basis for the current national Quality Assurance Standards (QAS) and urged the creation of a national DNA database.[9] In 1994, Congress authorized the FBI to establish and oversee the National DNA Index System (NDIS).[10]

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[2] U.S. Department of Health and Human Services, U.S. National Library of Medicine, "What is DNA?" https://medlineplus.gov/genetics/understanding/basics/dna/#:~:text=DNA%20bases%20pair%20up%20with,spiral%20called%20a%20double%20helix.

[3] U.S. Department of Health and Human Services, U.S. National Library of Medicine, "*How Many Chromosomes do People Have*?", https://medlineplus.gov/genetics/understanding/basics/howmanychromosomes/.

[4] U.S. Department of Health and Human Services, U.S. National Library of Medicine, "*What is a Gene*?", https://medlineplus.gov/genetics/understanding/basics/gene/.

[5] U.S. Department of Health and Human Services, U.S. National Library of Medicine, "*What is Noncoding DNA?*", https://medlineplus.gov/genetics/understanding/basics/noncodingdna/ (hereinafter, "What is Noncoding DNA?").

[6] What is Noncoding DNA?

[7] What is Noncoding DNA?

[8] 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.

[9] 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.

[10] Index to Facilitate Law Enforcement Exchange of DNA Identification Information, P.L. 103-322, Title XXI (C).

When the NDIS launched in 1998, nine states participated.[11] Currently, laboratories in all 50 states, the District of Columbia, the DC/FBI, Puerto Rico, and the U.S. Army Criminal Investigation Laboratory participate in the NDIS.[12]

DNA profiles generated by laboratories operated by local law enforcement agencies are stored in Local DNA Index Systems (LDISs). DNA profiles generated by state laboratories, along with authorized profiles stored in participating LDISs, are uploaded into State DNA Index Systems (SDISs). Each state has its own laws specifying which profiles can be included in their SDIS.[13] DNA profiles generated by federal laboratories, along with authorized DNA profiles in participating SDISs, are uploaded into the NDIS.[14] 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 SDISs allow each state to compare DNA profiles stored at the state level. Laboratories upload qualifying DNA profiles into an LDIS, an SDIS, or the NDIS and then compare DNA profiles using the Combined DNA Index System (CODIS) software produced and distributed by the FBI.[15]

CODIS can conduct searches to generate investigative leads in the NDIS across three indexes: convicted offenders, arrestee, and forensic. The convicted offender index contains DNA profiles developed from samples collected from convicted offenders; the arrestee index contains DNA profiles developed from samples collected as a result of an arrest; and the forensic index contains DNA profiles developed from samples of biological evidence (e.g., blood, semen, or saliva) collected at crime scenes or from crime victims.[16] As of October 2020, more than 200 labs participated in the NDIS nationwide and the database included more than 14 million offender profiles, more than 4 million arrestee profiles, and more than 1 million forensic profiles.[17] CODIS searches across these indexes for potential matches (also referred to as "hits").[18] 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.[19] Also, matches can occur between DNA profiles in the forensic index, thereby linking crime scenes to each other and identifying serial offenders.[20] Matches between multiple samples in the forensic index can allow

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

[12] Information on the number of participant laboratories and the number of profiles they have uploaded into the NDIS can be found on the FBI's website at https://www.fbi.gov/services/laboratory/biometric-analysis/codis/ndis-statistics.

[13] 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.

[14] U.S. Department of Justice, Federal Bureau of Investigation, *CODIS—NDIS Statistics*, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/ndis-statistics, (hereinafter, "CODIS-NDIS Statistics").

[15] U.S. Department of Justice, Federal Bureau of Investigation, *Frequently Asked Questions on CODIs and NDIS*, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/codis-and-ndis-fact-sheet, (hereinafter, "CODIS FAQs").

[16] National Institute of Justice, *DNA Evidence Basics: Types of Samples Suitable for DNA Testing*, https://nij.ojp.gov/topics/articles/dna-evidence-basics-types-samples-suitable-dna-testing#:~:text=Questioned%20or%20unknown%20samples%20collected,vaginal%2Fcervical%20samples%20collected%20on.

[17] CODIS-NDIS Statistics

[18] CODIS FAQs.

[19] CODIS FAQs. 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.

[20] CODIS FAQs.

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.[21]

DNA Profiles

DNA profiles entered into CODIS are based on 20 core short tandem repeat (STR) loci selected by the FBI's CODIS Core Loci Working Group.[22] In 2017, the number of required loci was increased from 13 to 20 to enhance discriminatory power, facilitate international cooperation via the collection of more common loci, and aid in missing person investigations.[23] The 20 STR loci used by the FBI are non-coding, meaning that they are not associated with human attributes such as height, eye or skin color, or susceptibility to a particular disease.[24] Each locus has one or two alleles, and it is these 20 pairs of alleles that are compared to match samples in the forensic index with profiles in either the offender or arrestee indexes. The 20 core loci chosen by the FBI provide a high level of discriminatory power. Two random Americans will, on average, share two or three alleles.[25] The probability that two unrelated individuals will share the original 13 pairs of alleles is estimated to be one in several hundred billion.[26] The new standard of 20 loci is expected to improve discriminatory power by eight orders of magnitude.[27]

It is important to ensure the quality of the DNA profiles entered into the NDIS. 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 QAS (see "Quality Assurance and Proficiency Testing Standards").[28] Laboratories submitting DNA profiles to the NDIS must be accredited and audited annually.[29] 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.[30] Laboratories that do not pass the annual audit can be prevented from entering DNA profiles in CODIS.[31] Currently, the following groups are approved to conduct audits: the American Association for Laboratory Accreditation (A2LA) and the ANSI-ASQ

[21] CODIS FAQs. Beyond the DNA profile, the NDIS does include an agency identifier, specimen identification number, and the DNA laboratory personnel associated with a DNA profile analysis.

[22] U.S. Department of Justice, Federal Bureau of Investigation, *Combined DNA Index System*, https://www.fbi.gov/services/laboratory/biometric-analysis/codis, (hereinafter "Combined DNA Index System").

[23] Combined DNA Index System.

[24] 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.

[25] Henry T. Greely 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 et al., 'Family Ties'").

[26] Greely et al., 'Family Ties'.

[27] Becky Hill and Margaret Kline, "The Impact and Benefit of Expanding the U.S. Core Autosomal STR Markers," presentation at the American Academy of Forensic Sciences, Washington, DC, February 2013, https://strbase.nist.gov/pub_pres/AAFS2013-Hill-expanding-core.pdf.

[28] CODIS FAQs.

[29] U.S. Department of Justice, Federal Bureau of Investigation, *Quality Assurance Standards for DNA Databasing Laboratories*, Standards 15 and 17, https://www.fbi.gov/file-repository/quality-assurance-standards-for-forensic-dna-testing-laboratories.pdf/view/ (hereinafter, "QAS").

[30] QAS, Standard 15.

[31] Fundamentals of Forensic DNA Typing, p. 271.

National Accreditation Board (ANAB).[32] In addition, DNA analysts must undergo semiannual proficiency testing.[33] DNA analysts who do not pass their semiannual proficiency tests are not to be allowed to enter profiles into CODIS.[34] Laboratories are also required to conduct two reviews of all DNA profiles before they are entered into CODIS.[35]

Currently, as prescribed by federal law (see "Quality Assurance and Proficiency Testing Standards"), only public laboratories that meet the QAS can submit DNA profiles to the NDIS. However, public laboratories are allowed to outsource casework to private laboratories and, provided certain standards are met, upload those analyses (i.e., profiles) to the NDIS. All private laboratories that conduct DNA testing for public laboratories must also be accredited, be audited annually, and adhere to the requirements of the QAS.[36] Public laboratories are required to conduct an initial site visit to each private laboratory they contract with to conduct DNA analyses.[37] 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.[38] Public laboratories are also required to review all outsourced DNA profiles generated by private laboratories.[39] The review by the public laboratory is in addition to the two reviews private laboratories are required to conduct per the QAS.

An offender profile in a DNA database consists of up to 40 numbers representing the data for the two alleles at the 20 STR loci, an agency identification number, a sample identification number, and an identifier for the analyst that entered the information.[40] Most jurisdictions retain the DNA sample used to generate the profile placed in CODIS.[41] 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.[42]

Privacy advocates are concerned that stored DNA samples include a wealth of genetic information that could be misused.[43] 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.[44] Under current federal law, anyone who improperly discloses genetic information or 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.[45]

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[32] CODIS FAQs. Note that the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) and Forensic Quality Services (FQS), although approved as distinct accrediting agencies, are now both under ANAB.

[33] QAS, Standard 13.

[34] Fundamentals of Forensic DNA Typing, p. 271.

[35] 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.

[36] QAS, Standard 17.

[37] QAS, Standard 17.

[38] QAS, Standard 17.

[39] QAS, Standard 17.

[40] Fundamentals of Forensic DNA Typing, p. 270.

[41] Fundamentals of Forensic DNA Typing, p. 262.

[42] Fundamentals of Forensic DNA Typing, p. 262.

[43] 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 (hereinafter, "Dangerous Excursions").

[44] Dangerous Excursions, p. 392.

[45] 34 U.S.C. §40706(c).

There are also policies that mandate DNA expungement (i.e., the destruction of DNA samples and removal of profiles from DNA databases) in certain cases (see "Inclusion and Expungement of DNA Profiles in the NDIS").

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 in the NDIS. States have also amended their DNA collection laws to reflect this expanded authority. Approximately 17.9 million convicted offender and arrestee profiles have been added to the NDIS since 2000.[46] In addition, 1,018,948 forensic profiles have been included in NDIS since 2000. Since the creation of the NDIS, hits generated by searches of it have aided in the investigation of more than 512,917 crimes.[47]

Rapid DNA Analysis

Rapid DNA machines are portable instruments that allow law enforcement officials to collect and analyze DNA samples in approximately 90 minutes with minimal training, and outside of a laboratory when necessary. Rapid DNA machines use samples collected from buccal (i.e., cheek) swabs to develop DNA profiles. The Rapid DNA Act of 2017 (Rapid DNA Act, P.L. 115-50) authorized the FBI to "issue standards and procedures for the use of Rapid DNA instruments and resulting DNA analyses." Rapid analysis is only recommended for generating DNA profiles of known persons, either to upload to CODIS to search for matches to crime scene or victim evidence (*hits*) or to use in support of law enforcement investigations of relationships between known persons. At present, there at two Rapid DNA Systems that are approved for accredited laboratory use on reference samples in an accredited laboratory.[48] In 2019, the FBI began pilot programs with select law enforcement agencies to allow DNA profiles collected from arrestees during the booking process and analyzed with Rapid DNA machines to be uploaded and searched on the NDIS and CODIS. However, according to the FBI, there are not presently any Rapid DNA Booking Systems approved for law enforcement to enter into the NDIS.[49]

Rapid DNA instruments are not authorized for use in processing crime scene DNA evidence.[50] There are several reasons why it is not advisable to use Rapid DNA machines for crime scene evidence, primary among them that such instruments destroy, or consume, the evidence they analyze. As a result, a crime scene sample analyzed by a Rapid DNA instrument cannot be retested. Crime scene evidence also is often much more complex than DNA samples obtained via buccal swabs.[51] Crime scene samples can be damaged or degraded and may contain mixed

[46] The FBI reports data on the number of offender, arrestee, and forensic profiles in the NDIS in 2000 at https://www.fbi.gov/file-repository/combined-dna-index-system-codis-brochure.pdf/view. The most recent data on the number of offender, arrestee, and forensics profiles in the NDIS can be found at https://www.fbi.gov/services/laboratory/biometric-analysis/codis/ndis-statistics. The figures on the number of profiles added since 2000 are based on the reported number of offender, arrestee, and forensic profiles in the NDIS as of July 2020.

[47] CODIS-NDIS Statistics.

[48] Email correspondence with Federal Bureau of Investigation, Office of Congressional Affairs, November 18, 2020.

[49] U.S. Department of Justice, Federal Bureau of Investigation, *Rapid DNA General Information*, https://www.fbi.gov/services/laboratory/biometric-analysis/codis/rapid-dna#:~:text=General%20Information,%20swab%20without%20human%20intervention.&text=The%20use%20of%20the%20term,%20swab%E2%80%9D%20is%20intentional (hereinafter, "Rapid DNA General Information").

[50] National District Attorneys Association, *NDAA position statement on rapid DNA*, January 30, 2018, https://dps.alaska.gov/getmedia/fb933229-8e52-4cf8-8fe0-cb72d5e039e3/NDAA-Statement-on-Use-of-Rapid-DNA-Technology-2018.pdf;.aspx.

[51] Rapid DNA General Information.

genetic material that cannot be distinguished by Rapid DNA machines. The use of Rapid DNA analysis on these more complex crime scene samples may thus lead to inconclusive or incorrect DNA analysis that a forensic lab may not be able to rectify because the sample is destroyed. Thus, the FBI has stated that crime scene samples must be "processed by an accredited forensic DNA laboratory that follows the FBI Quality Assurance Standards for Forensic DNA Testing Laboratories to be eligible for upload and/or search in CODIS."[52] However, reporting indicates that some state and local law enforcement agencies have used Rapid DNA instruments to analyze crime scene samples and to compare profiles in SDIS and LDIS systems.[53] As stated above, the FBI has certified specific Rapid DNA systems used only on reference samples in certified labs for searches in the NDIS. The ability to enter DNA profiles generated via Rapid DNA instruments and collected from any source, including crime scene samples, into SDISs and LDISs is determined by state and local law.

DNA Backlog

One consequence of the expansion of the collection and use of DNA in criminal investigations has been an increased burden on crime laboratories that can lead to a backlog of untested DNA samples. Delays in processing DNA evidence can impede efforts to apprehend and prosecute alleged offenders and exonerate wrongfully convicted individuals. Persistent backlogs can also result in crime laboratories prioritizing DNA analysis for violent offenses, such as homicide or sexual assault, over other offenses, such as property crimes, or in law enforcement agencies establishing policies stating that biological evidence is not to be collected for minor offenses.[54]

Backlogs are best considered in the context of each crime laboratory's capacity, size, and workload.[55] For example, if there are two laboratories and the first laboratory has a backlog of casework that is three times the size of the 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

Although there is no complete nationwide account of unsubmitted DNA evidence currently in the possession of law enforcement, there are several resources that shed light on the backlog.[56] A report on federal grants that address the DNA backlog determined that in states and units of local government that were awarded DNA Capacity Enhancement and Backlog Reduction (CEBR) grants between 2011 and 2017, the total requests for DNA analysis increased from about 250,000

[52] Rapid DNA General Information.

[53] Heather Murphy, "Coming Soon to a Police Station Near You: The DNA 'Magic Box'", *New York Times*, January 21, 2019, https://www.nytimes.com/2019/01/21/science/dna-crime-gene-technology.html; Maura Dolan, "'Rapid DNA' promises breakthroughs in solving crimes. So why does it face a backlash?", *Los Angeles Times*, September 25, 2019, https://www.latimes.com/california/story/2019-09-24/rapid-dna-forensics-crime-police.

[54] 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").

[55] 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.

[56] U.S. Government Accountability Office, *DNA Evidence DOJ Should Improve Performance Measurement and Properly Design Controls for Nationwide Grant Program*, GAO-19-216, March 2019, p. 23 (hereinafter, "DNA Evidence").

to 300,000, or about 20%.[57] Across the same period, crime labs also completed more DNA analysis requests, increasing from just over 200,000 completed to more than 250,000.[58] However, the backlog for crime scene DNA analysis had increased from 91,000 requests to about 169,000, or 85%.[59]

Another source of information on the DNA backlog is the Bureau of Justice Statistic's (BJS's) Census of Publicly Funded Forensic Crime Laboratories (CPFCL).[60] BJS compared data from the 2014 and 2009 census collections to show how requests for DNA analysis have changed. In 2009, BJS reported an estimated 103,500 backlogged forensic casework analyses, which increased in 2014 to an estimated 107,800 backlogged analyses.[61] However, the estimated increase in backlogged forensic casework analyses was not statistically significant. BJS data demonstrated that public crime laboratories completed more forensic casework samples in 2014 than in 2009. In 2014, public crime laboratories completed an estimated 296,000 requests for forensic casework analysis, up from an estimated 239,000 in 2009.[62] While crime laboratories were able to process more cases, the requests received for forensics casework analysis increased from an estimated 260,000 in 2009 to an estimated 333,000 in 2014.[63] In both cases (i.e., completed and received requests), the differences between the data for 2009 and 2014 were statistically significant.

Convicted Offender and Arrestee Samples

Data from BJS show that there was a statistically significant decrease in the backlog of requests for analysis of convicted offender and arrestee samples. The backlog of these samples decreased from 502,500 in 2009 to 64,800 in 2014.[64] Public crime laboratories processed an estimated 1,027,000 convicted offender and arrestee samples in 2009 and an estimated 904,000 samples in 2014, but the difference in processed samples is not statistically significant.[65] However, there was a statistically significant decrease in requests for analysis of convicted offender and arrestee samples (1,053,000 requests were received in 2009 compared to 908,000 in 2014).[66] This decrease in requests may reflect the fact that arrests nationally declined by 20% between 2009 and 2014.[67]

[57] DNA Evidence, p. 18.

[58] DNA Evidence, p. 18.

[59] DNA Evidence, p. 17.

[60] Matthew R. Durose et al., *Publicly Funded Forensic Crime Laboratories: Resources and Services, 2014*, U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, NCJ 250151, Washington, DC, November 2016 (hereinafter, "Publicly Funded Forensic Crime Laboratories").

[61] Publicly Funded Forensic Crime Laboratories, Table 6. A request for analysis was considered to be backlogged if it was not examined and reported to the submitting agency within 30 days.

[62] Publicly Funded Forensic Crime Laboratories, Table 4.

[63] Publicly Funded Forensic Crime Laboratories, Table 4.

[64] Publicly Funded Forensic Crime Laboratories, Table 6.

[65] Publicly Funded Forensic Crime Laboratories, Table 4.

[66] Publicly Funded Forensic Crime Laboratories, Table 4.

[67] Department of Justice, Federal Bureau of Investigation, Crime Data Explorer, https://crime-data-explorer.fr.cloud.gov/explorer/national/united-states/arrest.

Sexual Assault Kits (SAKs)

In recent years, increased attention has been paid to DNA backlogs in cases involving sexual assault (often referred to as the *rape kit backlog*).[68] According to the National Institute of Justice (NIJ), sexual assault kits are typically considered backlogged if they have been submitted to a crime laboratory but remain untested after 30 days.[69] A 2018 study estimated that 200,000 sexual assault kits remain untested in the custody of police departments.[70] The results from four studies funded by the NIJ indicated that 25%-50% of tested sexual assault kits generated CODIS-eligible DNA profiles and 50%-60% of those CODIS profiles resulted in a hit.[71]

Federal Law

Although state law dictates which 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 state databases 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 laws pertaining to how DNA is used in a criminal justice capacity.

Quality Assurance and Proficiency Testing Standards

Under current law,[72] the FBI is required to issue (and "revise from time to time") the QAS, including standards for testing the proficiency of forensic laboratories and forensic analysts in conducting DNA analyses.[73] 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.[74] The Rapid DNA Act (P.L. 115-50) also requires the FBI to issue standards and procedures for the use of Rapid DNA instruments and the resulting analyses. The QAS must include a system for grading proficiency testing performance to determine whether a laboratory is performing acceptably.[75] 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.[76]

According to the FBI, the QAS also describes the minimum standards for a laboratory engaged in forensic DNA analysis and/or databasing.[77] The QAS includes minimum laboratory standards for

[68] Gillian M. Pinchevsky, "Criminal Justice Considerations for Unsubmitted and Untested Sexual Assault Kits: A Review of the Literature and Suggestions for Moving Forward," *Criminal Justice Policy Review*, vol. 29, no. 9 (2018).

[69] National Institute of Justice, *Sexual Assault Kits: Using Science to Find Solutions*, https://www.nij.gov/unsubmitted-kits/.

[70] Rebecca Campbell et al., "Tested at Last: How DNA Evidence in Untested Rape Kits Can Identify Offenders and Serial Sexual Assaults," *Journal of Interpersonal Violence*, vol. 33, no. 24 (2018).

[71] Gillian M. Pinchevsky, "Criminal Justice Considerations for Unsubmitted and Untested Sexual Assault Kits: A Review of the Literature and Suggestions for Moving Forward," Criminal Justice Policy Review, vol. 29, no. 9 (2018).

[72] 34 U.S.C. §12591(a)(2).

[73] The most recent QAS took effect on July 1, 2020.

[74] 34 U.S.C. §12591(a)(3).

[75] 34 U.S.C. §12591(a)(3).

[76] 34 U.S.C. §12593(a)(1)(A).

[77] CODIS FAQs.

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.[78]

Inclusion and Expungement of DNA Profiles in the NDIS

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,[79] 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 (i.e., to exclude someone as a suspect);
- recovered from crime scenes;
- recovered from unidentified human remains; and
- voluntarily contributed from relatives of missing persons.[80]

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 external audits, not less than once every other year, that demonstrate compliance with the FBI's QAS;[81]
- that are prepared by accredited crime laboratories using rapid DNA instruments approved by the FBI in compliance with FBI published standards and procedures per the Rapid DNA Act[82]; 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

[78] CODIS FAQs.

[79] 34 U.S.C. §12592(a).

[80] 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.

[81] According to the FBI, American Association for Laboratory Accreditation (A2LA), and ANSI-ASQ National Accreditation Board (ANAB: The American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) and Forensic Quality Services (FQS), approved separately as accrediting agencies are now part of ANAB) are recognized as accrediting agencies. See CODIS FAQs.

[82] As of the cover date of this report, the FBI does not allow rapid DNA profiles in the NDIS.

> justice agencies for identification purposes, judicial proceedings, criminal defense purposes, and, if personally identifiable information is removed, for research and quality control purposes.[83]

Under current law, the FBI is required to expunge the 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.[84] Also, the FBI is required to expunge the 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.[85] Under current law, DOD is required to expunge the 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.[86] In each case, it is the individual whose DNA profile has been submitted to the NDIS who is responsible for seeking a DNA expungement.

As a condition of having access to the NDIS, states must also have a procedure to expunge a DNA profile from the state's database based on the same conditions applicable to a profile being expunged from the NDIS.[87] As with the federal government, many states place the responsibility for pursuing DNA expungement on the people whose DNA profiles have been submitted to an SDIS.[88] Thus, people who are eligible for expungement are required to know that expungements are possible (many states do not require that arrestees be notified of this possibility), correctly identify their own eligibility, and both pay for and complete all administrative steps (often including an expungement hearing).[89] DNA expungement is relatively rare. In a sample of four states that place the responsibility for pursuing DNA expungement on the arrestee, less than 1% of eligible samples were expunged.[90] However, there are states (e.g., Connecticut, Tennessee, Texas, Utah, North Carolina, Maryland) that have automatic DNA expungement policies that require the state to initiate expungement proceedings.[91]

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

Under current law,[92] 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

[83] 34 U.S.C. §12592(b).

[84] 34 U.S.C. §12592(d)(1)(A)(i).

[85] 34 U.S.C. §12592(d)(1)(A)(ii).

[86] 10 U.S.C. §1565(e).

[87] 34 U.S.C. §12592(d)(2)(A).

[88] National Conference of State Legislatures, DNA Arrestee Laws, http://www.ncsl.org/Documents/cj/ArresteeDNALaws.pdf (hereinafter, "DNA Arrestee Laws").

[89] Elizabeth E. Joh, "The Myth of Arrestee DNA Expungement," *University of Pennsylvania Law Review Online*, vol. 164, (2015), p. 51 (hereinafter, "The Myth of Arrestee DNA Expungement").

[90] The Myth of Arrestee DNA Expungement, p. 57.

[91] DNA Arrestee Laws.

[92] 34 U.S.C. §40702(a)(1)(A).

are detained under the authority of the United States."[93] In addition, the Bureau of Prisons (BOP) 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,[94] or any attempt or conspiracy to commit any of these crimes.[95] Federal probation officers 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.[96] Collected samples are required to be submitted to the FBI for analysis and the resulting DNA profiles are included in the NDIS.[97] The Rapid DNA Act allows the FBI to waive the requirement that DNA samples be submitted to the FBI for analysis if the analysis is conducted with a rapid DNA instrument and the results are included in the NDIS.

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.[98] 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.[99] The government of the District of Columbia may determine which offenses under the District of Columbia Code are considered qualifying offenses to require a DNA sample.[100] Collected samples must be submitted to the FBI for analysis and their resulting DNA profiles are included in the NDIS.[101] The Rapid DNA Act also allows the FBI to waive the requirement that DNA samples be submitted to the FBI for analysis if the analysis is conducted with a rapid DNA instrument and the results are included in the NDIS.

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[93] 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 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.

[94] As defined at 18 U.S.C. §16.

[95] 34 U.S.C. §40702(a)(1)(B).

[96] 34 U.S.C. §40702(a)(2).

[97] 34 U.S.C. §40702(b).

[98] 34 U.S.C. §40703(a)(1).

[99] 34 U.S.C. §40703(a)(2).

[100] 34 U.S.C. §40703(d).

[101] 34 U.S.C. §40703(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.

Under current law,[102] 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.[103] DOD is required to conduct an analysis of the collected sample and submit the results to the FBI for inclusion in the NDIS.[104]

Post-conviction DNA Testing

The Justice for All Act of 2004 (Justice for All Act, P.L. 108-405) established procedures for post-conviction DNA testing in federal courts. Under current law,[105] 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 fail to request DNA testing of that evidence in a prior motion for postconviction DNA testing"; or (2) "was previously subjected to DNA testing and the applicant is requesting DNA testing using a new method or technology that is substantially more probative than 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."

[102] 10 U.S.C. §1565(a)(1).

[103] 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.

[104] 10 U.S.C. §1565(b).

[105] 18 U.S.C. §3600(a).

- If the applicant was "convicted following a trial, the identity of the perpetrator was at issue in the trial."
- 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.[106]

If the court orders DNA testing, the testing is carried out by the FBI.[107] 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."[108] The cost of any DNA testing is borne by the applicant unless the applicant is indigent; in that case, the cost of DNA testing is borne by the government.[109]

The results of any post-conviction DNA test must be simultaneously provided to the court, applicant, and U.S. Attorney's office.[110] If the DNA test excludes the applicant as the source of the biological evidence, the DNA profile is required to be run through CODIS, assuming that the analysis was conducted in a manner consistent with the FBI's QAS, to see if the probative sample matches any profiles in the NDIS. The results of this search are to be simultaneously provided to the court, applicant, and U.S. Attorney's office. 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."[111] 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 results in a match, the Department of Justice (DOJ) is to contact the appropriate agency and preserve the applicant's DNA sample.[112] 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.[113]

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[106] 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).

[107] 18 U.S.C. §3600(c)(1).

[108] 18 U.S.C. §3600(c)(2).

[109] 18 U.S.C. §3600(c)(3).

[110] 18 U.S.C. §3600(e)(1).

[111] 18 U.S.C. §3600(e)(3)(A).

[112] 18 U.S.C. §3600(e)(3)(B).

[113] 18 U.S.C. §3600(e)(3)(C).

If the results of the DNA test are inconclusive, the court can order further testing, if appropriate, or it can deny the applicant relief.[114] 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 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;[115]
- 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.[116]

Under current law, if the applicant is convicted of 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.[117]

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.[118] Under current law,

> the court shall grant the motion of the applicant for a new trial or resentencing, as appropriate, if the DNA test 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—
>
> (A) in the case of a motion for a new trial, the Federal offense for which the applicant is sentenced to imprisonment or death; and
>
> (B) in the case of a motion for resentencing, another Federal or State offense, if evidence of such offense was admitted during a Federal sentencing hearing and exoneration of such offense would entitle the applicant to a reduced sentence or a new sentencing proceeding.[119]

[114] 18 U.S.C. §3600(f)(1).

[115] 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).

[116] 18 U.S.C. §3600(f)(2).

[117] 18 U.S.C. §3600(f)(3).

[118] 18 U.S.C. §3600(g)(1).

[119] 18 U.S.C. §3600(g)(2).

DNA Exonerations

The first DNA exoneration occurred in 1989, and since then 375 persons across 37 states have been exonerated using DNA.[120] These exonerees were on average 26.6 years old at the time of their conviction and were incarcerated for an average of 14 years. Sixty percent of the exonerees were African American. One hundred and thirty of the exonerees were wrongfully convicted for murder, and 21 served time on death row. Twenty-nine percent of these convictions involved a false confession, and 31% of those who gave false confessions were 18 years old or younger when they were arrested and 9% had known mental health and/or mental capacity issues.

Preservation of Biological Evidence

Most law enforcement agencies and forensic laboratories retain the DNA samples from which they generated CODIS profiles to confirm the accuracy of a hit made in the NDIS and provide for a retest of the sample if new technology is developed.[121] The Justice for All Act P.L. 108-405, among other things, established standards for preserving biological evidence. Under current law,[122] the federal government is required to preserve biological evidence[123] that was secured in the investigation or prosecution of a federal offense, if a defendant was imprisoned for the offense, unless[124]

- "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. The bulk of the programs focus on providing state and local governments with funding to reduce the backlog of forensic and 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.

[120] The Innocence Project, *DNA exonerations in the United States*, https://www.innocenceproject.org/dna-exonerations-in-the-united-states/.

[121] Fundamentals of Forensic DNA Typing, p. 262.

[122] 18 U.S.C. §3600A(a).

[123] *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).

[124] 18 U.S.C. §3600A(c).

Debbie Smith DNA Backlog Grant Program

The Debbie Smith DNA Backlog Grant Program (Debbie Smith grants) provides grants to state and local governments for nine major purposes:

1. analyzing DNA samples "collected under applicable legal authority" for inclusion in CODIS;[125]
2. analyzing DNA samples from crime scenes for inclusion in CODIS, if possible prioritizing "samples from rape kits, samples from other sexual assault evidence, and samples taken in cases without an identified suspect"[126];
3. increasing the capacity of state and local laboratories to complete DNA analyses;
4. DNA sample collection;
5. improving the timeliness of DNA analysis for crime scene samples, including those from incidents of sexual assault and violent crimes;
6. establishing procedures for DNA collection from arrestees as consistent with federal, state, local, or tribal law;
7. auditing untested samples from sexual assault evidence in the possession of state and local governments;
8. improving law enforcement agencies' practices and timeliness for DNA collection and processing, particularly for sexual assault and other violent crimes; and
9. improving state and local prosecutors' capacity to "address the backlog of violent crime cases in which suspects have been identified through DNA evidence."[127]

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 and territories with the costs associated with collecting DNA samples from arrestees (assuming there is statutory authority in the state to collect DNA samples from people arrested for certain offenses).[128] 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 the Debbie Smith grants (listed seventh and eighth in the list above).

The Attorney General is required to award these funds using a formula and grant conditions that maximize the use of DNA technology to solve crimes and to address the needs of jurisdictions with large backlogs.[129] In making these awards, the Attorney General is directed to weigh three aspects of a given jurisdiction: the number of offender and forensic samples awaiting analysis, the population, and the number of violent crimes.[130] 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

[125] 34 U.S.C. §40701(a).

[126] 34 U.S.C. §40701(a).

[127] 34 U.S.C. §40701(a).

[128] According to the National Conference of State Legislatures, as of 2018 (the most recent report), 31 states have laws allowing for the collection and analysis of DNA samples from arrestees. For more detail, see http://www.ncsl.org/Documents/cj/Arrestee_DNA_Laws.pdf.

[129] 34 U.S.C. §40701(c).

[130] 34 U.S.C. §40701(c).

Columbia.[131] Each territory[132] is to receive 0.125% of the total appropriation.[133] DOJ may award not more than 1% of total grant funding each fiscal year to offset the cost of accrediting and auditing laboratories.[134]

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.[135] Grants for analyses of DNA samples can be made in the form of a contract or voucher for laboratory services at nonprofit or for-profit laboratories that satisfy the QAS and have been approved by the Attorney General.[136]

State and local governments receiving funding under the program are required to submit a report to DOJ with a summary of the activities, an assessment of whether such activities are meeting the needs identified in the grant application, and other information the Attorney General may require.

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 to conduct an audit of their 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, 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. The SAFER Act of 2017 reauthorized and extended these provisions until FY2023 (P.L. 115-107).

Debbie Smith grants were originally authorized under the Justice for All Act (P.L. 108-405). The law amended the DNA Backlog Elimination Act of 2000,[137] authorizing appropriations of $151 million for each fiscal year from FY2004 to FY2009. The program was reauthorized under the Debbie Smith Reauthorization Act of 2008 (P.L. 110-360), which authorized appropriations of $151 million from FY2009 to FY2014. The Debbie Smith Reauthorization Act of 2014 (P.L. 113-

[131] 34 U.S.C. §40701(c).

[132] The territories are as follows: U.S. Virgin Islands, American Samoa, Guam, and the Northern Mariana Islands.

[133] 34 U.S.C. §40701(c).

[134] 34 U.S.C. §40701(k).

[135] 34 U.S.C. §40701(d).

[136] 34 U.S.C. §40701(d).

[137] 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.

182) extended the $151 million per fiscal year authorization until FY2019. The Debbie Smith Reauthorization Act of 2019 (P.L. 116-104) reauthorized the program at $151 million per fiscal year until FY2024. For FY2021, Congress appropriated $110 million for the Debbie Smith program.

Sexual Assault Forensic Exam Program

This 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. The Debbie Smith Reauthorization Act of 2019 (P.L. 116-104) reauthorized the program at $30 million per fiscal year until FY2024. In FY2021, Congress appropriated $4 million for this program.

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

This program requires the Attorney General 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 Debbie Smith Reauthorization Act of 2019 (P.L. 116-104) reauthorized the program at more than $12 million per fiscal year until FY2024. In FY2021, Congress allowed up to 4% of funds appropriated for the Debbie Smith program to be used for this purpose.

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 (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 that may establish innocence for violent felony offenses. The act authorized appropriations of $5 million each fiscal year from FY2005 to FY2009. The Justice for All Reauthorization Act of 2016 (P.L. 114-324) reauthorized appropriations for this program at $5 million per fiscal year for FY2017 to FY2021. For FY2021, Congress appropriated $8 million for this program.

DNA Research and Development Grants

The Justice for All Act 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 million each fiscal year for FY2005 to FY2009. The Justice for All Reauthorization Act of 2016 (P.L. 114-324) reauthorized appropriations for this program at $5 million per year for FY2017 to FY2021. Congress did not appropriate funds for this program in FY2021.

Sexual Assault Kit Initiative (SAKI)

SAKI funds address both the current backlog of sexual assault kits (SAKs) and efforts to prevent any future backlogs. SAKI funds may be used to inventory and test unsubmitted SAKs, pursue

new investigations and prosecutions, support victims, create evidence-tracking systems, train law enforcement in sexual assault investigations, fund research on the outcomes of sexual assault cases, and "increase collection of offender DNA for CODIS upload purposes (in full adherence to the laws in the jurisdiction), that may lead to the identification of serious and serial sex offenders."[138] Since the initiative's launch in 2015, more than 130,000 SAKs have been inventoried, more than 71,000 kits have been submitted to labs for testing, and about 11,000 DNA hits have been made in CODIS.[139] For FY2021, Congress appropriated $48 million for this initiative.

Emmett Till Cold Case Investigations Program

Under this program, DOJ is authorized to make grants to state or local law enforcement agencies for expenses associated with the investigation and prosecution of criminal offenses involving civil rights violations that occurred not later than December 31, 1979,[140] and resulted in a death. The Emmett Till Unsolved Civil Rights Crime Act of 2007 (P.L. 110-344) authorized $2.0 million each fiscal year from FY2008 to FY2017 for this program. The Emmett Till Unsolved Civil Rights Crimes Reauthorization Act of 2016 (P.L. 114-325) reauthorized this program at $2 million each fiscal year from FY2017 to FY2027. For FY2021, Congress appropriated $2 million for this program.

Table 1. Appropriations for DNA-Related Programs, FY2016-FY2021

(in millions of dollars)

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
Debbie Smith DNA Backlog Grant Program	117.0[a]	117.0[a]	120.0[a]	120.0[a]	102.0[a]	110.0[a]
Sexual Assault Forensic Exam Program	4.0	4.0	4.0	4.0	4.0	4.0
Kirk Bloodsworth Post-Conviction DNA Testing Grant Program	4.0	4.0	6.0	6.0	7.0	8.0
DNA Research and Development Grants	—	—	—	—	—	—
Sexual Assault Kit Initiative	45.0	45.0	47.5	48.0	48.0	48.0
Emmett Till Cold Case Investigations Program	—	—	—	—	2.0	2.0

Source: FY2016 enacted taken from P.L. 114-113. FY2017 enacted taken from P.L. 115-31. FY2018 enacted taken from P.L. 115-141. FY2019 enacted taken from P.L. 116-6. FY2020 enacted taken from P.L. 116-93. FY2021 enacted taken from P.L. 116-260.

a. DOJ is authorized to use up to 4% of the funding provided for the Debbie Smith DNA Backlog Grant program for the purposes authorized under the DNA Training and Education for Law Enforcement, Correctional Personnel, and Court Officers Program

[138] Department of Justice, Bureau of Justice Programs, Sexual Assault Kit Initiative (SAKI), *Overview*, https://bja.ojp.gov/program/sexual-assault-kit-initiative-saki/overview (hereinafter, "SAKI Overview").

[139] SAKI Overview.

[140] This date was originally set for December 31, 1969. The 2016 reauthorization changed the year to 1979.

Going Forward

As highlighted above, the use of DNA in the criminal justice system is constantly evolving to take advantage of the rapid pace of scientific and technological improvements. There are several issues raised here that policymakers may wish to consider. See the following, for example:

- **Rapid DNA Tests.** Rapid DNA technology offers an opportunity to process certain types of DNA samples much more quickly and potentially lessen the demands on crime labs. Congress might consider legislation or grant funding on the use of this technology. However, Rapid DNA also has important limitations, particularly in its usefulness for crime scene samples. Thus, Congress might also consider legislation aligning with FBI guidance prohibiting the use of Rapid DNA machines on crime scene DNA samples. Finally, Immigration and Customs Enforcement (ICE) recently expanded a program to use Rapid DNA tests to verify familial relationships between people "entering or attempting to enter" the United States at the southwest border.[141] Congress might question whether DNA profiles obtained by ICE should be stored in CODIS, particularly profiles created for minors.
- **DNA Expungement.** Congress might consider the low rate of DNA expungement discussed earlier in this report by authorizing procedures for automatic, or state-initiated, expungement of DNA obtained from arrestees who are never charged, are acquitted, or whose conviction was overturned. Developing a process by which individuals can have their DNA expunged from an SDIS is currently a condition for access to the NDIS. The Katie Sepich Enhanced DNA Collection Act of 2012 (P.L. 112-253) included conditions that grantees must provide written notification of DNA expungement policies to people who had samples collected, list eligibility requirements and instructions for requesting expungement on a public website, and make expungement decisions within 90 days of receiving an expungement request. Congress might consider attaching similar provisions to future legislation or federal grants; however, adopting more stringent expungement policies may be costly for states in terms of both staff and resources required.
- **Sexual Assault Kit Backlog.** Congress has created several federal grants to address the sexual assault kit backlog; however, policymakers could examine further actions such as developing an Electronic Evidence Exchange Standard (see the NIJ's handbook of National Best Practices for Sexual Assault Kits for additional considerations).[142]

[141] U.S. Immigrations and Customs Enforcement, "Ice Awards New Contract for Rapid DNA Testing at Southwest Border, Expands Pilot Program," press release, June, 18, 2019, https://www.ice.gov/news/releases/ice-awards-new-contract-rapid-dna-testing-southwest-border-expands-pilot-program.

[142] National Institute of Justice, "National Best Practices for Sexual Assault Kits: A Multidisciplinary Approach," https://www.ncjrs.gov/pdffiles1/nij/250384.pdf.

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