



DNA Analysis for “Minor” Crimes: A Major Benefit for Law Enforcement

by Edwin Zedlewski and Mary B. Murphy

About the Authors

Edwin Zedlewski is the Acting Deputy Assistant Director for Research and Evaluation at NIJ. Mary B. Murphy is the Managing Editor of the *NIJ Journal*.

When law enforcement officers arrive at the scene of a major crime, they routinely collect biological evidence: blood, semen, hair strands. The evidence goes to the crime lab, where forensic technicians analyze the DNA and run the “profile” against the national, State, or local DNA database, hoping to get a “hit” or match that will help bring the offender to justice.

Murders and sexual assaults receive top priority for DNA analysis, and officers routinely look for biological evidence at these crime scenes.¹ Property crimes, on the other hand, are a different story. In many cases, officers do not routinely collect biological evidence at property crime scenes—perhaps because they assume burglars do not leave DNA, or because departmental policies do not authorize that samples be taken at property crime scenes.

As more State legislatures expand the categories of offenders required to submit DNA samples, DNA databases continue to grow at a steady rate.² For example, notes William David Coffman, Crime Laboratory Analyst Supervisor–DNA Database at the Florida Department of Law Enforcement, Florida’s database contained 74,301 samples in 2000. By 2004, that number had more than tripled to 236,491.³ The increasing number of samples submitted and number of requests for analysis have generated oppressive case-loads for already understaffed crime labs. In response, the labs have had to relegate the analysis of DNA evidence from property offenses—if such evidence is recovered at all—to a back seat in favor of more pressing, high-profile cases. Untested DNA samples from property and other crime scenes are creating a massive backlog of untested samples. (See “Reducing the Backlog.”)

But three NIJ pilot projects have demonstrated that analyzing DNA from property crimes can be extraordinarily useful. Officials at the Miami-Dade County Police Department, the New York City Police Department, and the Palm Beach County Sheriff’s Office have

REDUCING THE BACKLOG

Recent years have witnessed a significant backlog of casework samples in crime labs across the country. In addition to the backlog of DNA evidence collected through case investigations, there is also a backlog of DNA data from known offenders waiting to be input into searchable databases. Furthermore, while many States have statutes authorizing the collection of DNA evidence from a variety of convicted offenders, substantial numbers of authorized samples have yet to even be collected, let alone analyzed. The convicted-offender backlog includes as many as 300,000 unanalyzed DNA samples from offenders convicted of crimes, with more than 500,000 samples yet to be taken.

While the number of DNA samples has grown, the ability of crime labs to analyze those samples has not kept pace. A number of factors contribute to the inability of labs to accept and process casework samples in a timely fashion. For one thing, most State and local crime labs lack sufficient numbers of trained forensic scientists and the funds to hire more staff. Even where funds are available, there is an insufficient pool of qualified forensic scientists to hire. In addition, many State and local crime labs lack the resources and lab space necessary to obtain and use state-of-the-art automated equipment and software that would speed up DNA analyses.

To address this problem, NIJ, at the direction of the Attorney General, convened a working group of Federal, State, and local criminal justice and forensic science experts to study the problem and submit recommendations on how to eliminate the backlog and build the Nation's capacity to routinely use DNA as an investigative tool. The recommendations include:

1. Improve the DNA analysis capacity of public crime laboratories.
2. Provide financial assistance to State and local crime labs to help eliminate casework backlogs.
3. Develop funding to eliminate convicted-offender database backlogs and encourage aggressive programs to collect owed samples from convicted offenders.
4. Support training and education for forensic scientists to increase the pool of available DNA analysts.
5. Provide training and education on the proper collection, preservation, and use of forensic DNA evidence to police officers, prosecutors, defense attorneys, judges, victim service providers, medical personnel, and other criminal justice personnel.
6. Support the development of improved DNA technologies, set up demonstration projects to encourage the increased use of DNA testing, and create a national forensic science commission to help ensure that the latest DNA and other forensic technologies are used to the maximum extent by criminal justice systems.

Subsequently, Congress passed a 5-year, \$1-billion Presidential Initiative, "Advancing Justice Through DNA Technology," and in October 2004 passed the "Justice for All Act of 2004." The Act:

- Establishes enforceable rights for victims of crimes.
- Enhances DNA collection and analysis efforts.
- Provides for postconviction DNA testing.
- Authorizes grants to improve the quality of representation in State capital cases.

Learn more at <http://www.DNA.gov>.

had success solving high-volume property crimes (like burglary and auto theft) as well as violent crimes (such as sexual assault and murder) using funds provided by NIJ. Although the initial goal of the project was to reduce the large backlog of DNA evidence waiting to be analyzed, participants made the unexpected discovery that analyzing DNA from property crimes can have major public safety benefits.⁴

Not an Innocent Crime

The benefits stem from the recognition that property offenders—burglars, in particular—pose a significant threat not just to those whose property they steal, but to the community at large. Bud Stuver, who heads the DNA Testing Program at the Miami-Dade County Police Department, notes that burglary is not the "innocent crime" that some people assume it to be.

For one thing, its victims suffer psychological trauma not measurable in monetary terms. For another the economic losses these victims experience are significant.⁵ On top of that, burglary—despite its prevalence—has the lowest clearance rate of any Index crime.⁶

But the potential that burglars will commit more serious, violent crimes is perhaps the greatest danger posed by property crime offenders. Individuals who commit property crimes have a higher recidivism rate than those who commit other types of offenses, and their demonstrated potential to engage in more serious, violent behavior makes analyzing DNA evidence from property crimes not just an option, but a matter of necessity.

W. Mark Dale, former crime lab director at the New York City Police Department and now the director of the Northeast Regional

WHAT IS CODIS?

The Combined DNA Index System (CODIS) is an electronic database of DNA profiles administered through the Federal Bureau of Investigation. The system lets Federal, State, and local crime labs share and compare DNA profiles. Through CODIS, investigators match DNA from crime scenes with convicted offenders and with other crime scenes using computer software, just as fingerprints are matched through automated fingerprint identification systems.

CODIS uses two indexes: (1) the Convicted Offender Index, which contains profiles of convicted offenders, and (2) the Forensic Index, which contains profiles from crime scene evidence.

The real strength of CODIS lies in solving cases that have no suspects. If DNA evidence entered into CODIS matches someone in the offender index, a warrant can be obtained authorizing the collection of a sample from that offender to confirm the match. If the offender's DNA is in the forensic index, the system allows investigators—even in different jurisdictions—to exchange information about their respective cases.

Forensic Institute at the University of Albany, State University of New York, reports that in his experience, when no-suspect DNA from a murder scene is checked against CODIS—a database that allows Federal, State, and local crime labs to exchange and compare DNA profiles—it often yields a match with the DNA of a burglar. (See “What Is CODIS?”) A review of New York's first 1,000 hits showed that the vast majority were linked to crimes like homicide and rape, but of these, 82 percent of the offenders were already in the databank as a result of a prior conviction for a “lesser” crime such as burglary or drugs.⁷ In a Florida study, 52 percent of database hits against murder and sexual assault cases matched individuals who had prior convictions for burglary, notes Coffman.⁸

Worth What You Pay for It

Despite its proven value, expanding DNA analysis to property crimes is costly. The price tag depends on factors such as the fees paid to outside vendors for analysis, the type of testing needed, the number of samples tested per case, and the cost to have police collect biological evidence at property crime scenes and pursue investigative leads generated by CODIS.

The danger that property crime offenders will commit more serious crimes has convinced many that funding a larger database to include DNA from property crimes is

money well spent. Bud Stuver looks at affordability from the perspective of the costs to the justice system as a whole. “It is much more expeditious to employ DNA testing than to pay investigators [to track down leads],” he observes. In the same way, he notes, once a DNA result is in hand, it can substantially shorten what can be lengthy and costly court proceedings. Offenders may be more likely to plead guilty if they know the government's case-in-chief contains DNA evidence linking them to the crime.

NIJ Funding Made It Possible

With NIJ support, three crime labs were able to overcome the cost issue and send their no-suspect DNA samples to outside vendors for analysis. The good news was not just that the analyses yielded a large number of hits and helped clear the backlog of samples—it was also the surprisingly high proportion of hits against burglaries and the links discovered among these crimes.

In New York, for example, biological evidence from 201 burglaries yielded 86 “CODIS-acceptable” profiles.⁹ On the basis of these numbers, the lab has been able to develop several pattern burglaries from these profiles. One profile uncovered a five-burglary serial offender. Most of New York's DNA profiles resulted in forensic hits to multiple unsolved cases. A few were linked to more serious, violent crimes such as sexual assault and robbery. More than three dozen burglary profiles have been linked through CODIS to other unsolved cases; more than 30 of the newly analyzed cases were matched through CODIS to convicted offenders and are under investigation.

Links among crimes are coming to light in two other sites. DNA in bloodstains collected at the scene of four household burglaries in Miami-Dade linked all four to the same offender, who turned out to have been previously convicted of another burglary. DNA evidence collected in Palm Beach also linked three different vehicle burglaries in which no suspect had been identified, and ultimately identified the perpetrator. He, too, turned out to be a previously convicted burglar. Overall, in Miami-Dade, 526 CODIS-acceptable profiles taken from unsolved cases produced 271 hits; in Palm Beach, 229 profiles produced 91 hits. Of the 362

samples matched through CODIS, more than half (56 percent) came from evidence collected at burglary scenes.

The success of these programs in using DNA evidence from property crimes to solve other cases is an example for other jurisdictions to emulate. Encouraging police officers to recognize and collect biological samples at property crime scenes is a major step in this direction, one already implemented by Miami-Dade County. Stuver, who is providing this training, works hard to convince officers that retrieving such evidence “is worth the time and effort.”

Work Still to Be Done

But a hit doesn't mean the case is cleared—arrest, prosecution, and conviction must follow. NIJ is working with the sites to come up with ways to move beyond hits to successfully prosecuting offenders. This effort requires a balancing of resources among the law enforcement officers who collect the DNA evidence, the forensic specialists who analyze the samples, and the detectives who make arrests based on CODIS hits. Enhancing the ability of jurisdictions to generate CODIS-acceptable samples and ensuring that investigators use that evidence to build cases against offenders will go a long way toward maximizing the potential of DNA as a crime-solving tool.

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Notes

1. Lovrich, N.P., et al., *National Forensic DNA Study Report*, final report submitted to NIJ, 2003: 13 (NCJ 203970). Available at <http://www.ncjrs.gov/pdffiles1/nij/grants/203970.pdf>.
2. Today, every State has a DNA database statute that allows collection of DNA from specified offenders. All 50 States require DNA from sex offenders and murderers, and 46 States require DNA from all violent felony convictions (including assault and battery and robbery). Over the past several years, a growing number of States have been expanding their databases to include nonviolent felony convictions; 45 States require DNA from burglary convictions, 36 States require DNA from certain drug convictions, and 31 States require DNA from all felony convictions. (These figures are current through July 2003.) *National Forensic DNA Study Report*, Washington, DC: U.S.

ENGLAND'S USE OF DNA TO SOLVE PROPERTY CRIMES YIELDS GREAT SUCCESS

In 1995, England was propelled to the forefront of innovation in the use of DNA when it unveiled its National DNA Database (NDNAD). A progression of database laws in England and Wales has given law enforcement the right to collect samples and profile individuals arrested for, or suspected of, involvement in a crime—and not just violent crimes. Officials found that the database's usefulness as an investigative tool increased when it was expanded to include DNA from non-violent crimes such as burglary, car theft, and vandalism. Success also came from the short turnaround time from sample collection to DNA profiling. Biological samples from suspects and arrestees are typically analyzed within 5 days; crime scene analysis takes about 24 days.

Department of Justice, Office of Justice Programs, 2003: 37.

3. Source: Florida Department of Law Enforcement State DNA Database Statistics, Tallahassee, Florida.
4. The three sites were among several that received grants to reduce their DNA backlog. Nationwide, the number of cases that possibly have biological evidence not yet sent by local law enforcement agencies to crime labs or backlogged at the labs is more than one half million (542,700). *National Forensic DNA Study Report*, Washington, DC: U.S. Department of Justice, Office of Justice Programs, 2003: 3.
5. The economic loss for persons who were crime victims totaled \$15.6 million in 2002; for property crime victims, it was \$14.2 million (*National Crime Victimization Survey*, Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics, 2002: Table 82).
6. *Crime in the United States 2002: Uniform Crime Reports*, Washington, DC: Federal Bureau of Investigation, 2003: 221, 223. Burglary had the lowest clearance rate of any Index crime.
7. Source: <http://criminaljustice.state.ny.us/forensic/dnabrochure.htm> (retrieved from the World Wide Web on April 12, 2005).
8. Source: Florida Department of Law Enforcement State DNA Database Statistics, Tallahassee, Florida.
9. CODIS-acceptable profiles are those that meet the standards established by the National DNA Index System (NDIS). NDIS, the single, central repository of DNA records that is used to generate investigative leads, promulgates standards that ensure the reliability and compatibility of DNA profiles submitted by State and local law enforcement agencies. NDIS is distinct from the State DNA Index Systems (SDIS), which produce the majority of DNA hits.