



## Handling the Price of Success

*In April, Danny Brown was released from an Ohio prison after serving 19 years. Charges of rape and murder, for which he had been convicted in 1982, were dismissed. His release was the result of a DNA (deoxyribonucleic acid) test that showed he was not the attacker of a 28-year-old woman. But the story could not and did not end there.*

*The woman, who was the mother of a 6-year-old boy and 3-year-old twin girls, had been raped and murdered. Brown's release meant the killer might still be at large. When analysts at the Ohio State crime lab ran a DNA sample from the crime scene through the State's database of convicted offenders, they got a match. His name was Sherman Preston, and he was serving 15 years to life in the Lebanon Correctional Facility for the 1983 slaying of another Ohio woman.*

*Brown, now 46, owes his exoneration in large part to the Forensic DNA Laboratory Improvement Program. Managed by the National Institute of Justice's (NIJ's) Office of Science and Technology (OS&T) since 1996, this program has invested Federal dollars in improving the DNA analysis capabilities of State and local crime labs to clear up the enormous backlog of DNA samples collected from convicted offenders and crime scenes.*

Roger Kahn, Ph.D., who heads Ohio's crime laboratory system, calls the changes that have resulted from the laboratory improvement program "extraordinarily successful" and "a miracle." Before the State received these funds, Kahn says, DNA testing in Ohio was almost nonexistent. "According to UCR [Unified Crime Reports], we had 6,000 rapes and homicides annually. We polled our crime labs and found that 4,000 of those cases were submitted for examination to crime labs in the State. We have 11 labs and only 3 did testing inhouse. In 1996, they tested 350 cases, primarily by reverse dot-blot methods. The other 8 sent 175 out of State. The majority of Ohio crime labs did no DNA testing, which meant very few cases were profiled," Kahn says.

Ohio benefited, however, from a grant that provided money for DNA analysts' education and training, lab equipment and supplies, and minor facility upgrades and modifications. To comply with Federal education standards, analysts took classes in genetics, molecular

biology, biochemistry, and statistics. Purchases of new automated analysis equipment and supplies helped the labs get up to speed with the latest technologies. The funding also kick-started voter approval of general revenue funds for a new 40,000-square-foot lab, half of which is devoted to DNA analysis.

Ohio is now on track with profiling cases that have a suspect. Additional grant funds have been used to test a backlog of samples collected from convicted offenders. "We had 30,000 [samples] collected and none tested. That was in November of last year. We now have all 30,000 tested, and we did it in 6 months," Kahn says. By February, the State database was online and linked with the Federal Bureau of Investigation's (FBI's) Combined DNA Index System (CODIS), a national database of convicted offenders. Almost immediately there were 11 hits.

### A HELPING HAND

Public crime laboratories historically have suffered from low funding, understaffing, and high personnel turnover, leaving them in some cases with inconsistent standards, inexperienced personnel, and tremendous backlogs. Nevertheless, reliable and timely forensic analytical results from these labs are essential to solving crime. The equipment, training, and laboratory modifications required to increase State and local crime lab capacities and bring them up to national quality assurance standards come at a cost beyond the reach of most agencies. Federal funding support, in the form of grants to State and local agencies, is therefore critical to the improvement of crime laboratory services. The following are potential funding sources that may be used for personnel, training, equipment, technical assistance, research, development, or implementation.

Office of Justice Programs (OJP) funding programs are divided into two main categories: formula grants and discretionary grants.

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“It’s been quite a ride,” Kahn says. “If it hadn’t been for the laboratory improvement program, this State would have stayed right where it was, with almost no DNA testing being done. This program has been extraordinarily successful. We feel like we’ve accomplished a miracle.”

## DNA Laboratory Improvement Program

The Forensic DNA Laboratory Improvement Program was authorized in 1994 to address low funding, understaffing, and high personnel turnover rates at State and local crime labs. The FBI’s DNA Advisory Board and the Technical Working Group on DNA Analysis Methods (now known as the Scientific Working Group on DNA Analysis Methods) recognized that such problems often resulted in inconsistent standards and underqualified personnel. Together they advocated creating and adopting national standards for DNA testing and educational requirements for analysts.

Standards and education were becoming especially important with the implementation of CODIS and a nationwide movement toward establishing databases of convicted offender DNA records. To link the States to CODIS meant labs would have to comply with standard testing methodologies. But the equipment, training, and laboratory modifications that were required to bring State and local crime labs up to those standards cost more than most agencies could afford. Federal funding was critical.

In the end, more than \$37 million was provided to labs in 48 States. It was used for a number of purposes:

- Developing forensic DNA-testing capabilities in States that were not testing DNA.
- Improving or expanding analysis capabilities in laboratories that already were testing DNA, especially for nonsuspect serial sexual assault cases.
- Fostering compatibility and cooperation among forensic laboratories in and among States that wanted to match and exchange DNA identification records through CODIS.
- Ensuring that DNA testing would be conducted according to national standards.

An important element of the program was the creation of consortiums. Labs requesting funding agreed to work together to develop coordinated statewide testing programs. A more vital factor in the program’s success was NIJ’s push to spend grant dollars on new technology; the lion’s share of grant funds was spent on changing from restriction fragment length polymorphism (RFLP) analysis, a time-consuming and expensive practice, to short tandem repeat (STR) analysis, a faster and more sensitive method slated for use by the CODIS database. Any lab that wanted to link up would not only have to

## A Helping Hand (continued)

### FORMULA GRANTS

Formula grants are awarded to State and local governments based on a predetermined formula that might be dependent on a jurisdiction’s crime rate, population, or other factors. States are generally required to pass a significant portion of formula grants through to local agencies and organizations in the form of subgrants.

- **Edward Byrne Memorial State and Local Law Enforcement Assistance Formula Grant Program.** Provides funds to assist States and units of local government control and prevent drug abuse, crime, and violence, and improve the functioning of the criminal justice system. Byrne funds are awarded for projects in fields that include law enforcement, adjudication, community crime prevention, and the development of criminal justice information systems. The grants can be used to provide additional personnel, equipment, facilities, and training. For further information, contact the Office of Justice Programs, Bureau of Justice Assistance (BJA), at 202–514–6638 or access the BJA website at [www.ojp.usdoj.gov/bja](http://www.ojp.usdoj.gov/bja).

### DISCRETIONARY GRANTS

Discretionary grants are awarded on a competitive basis to public and private agencies and private nonprofit organizations.

- **Convicted Offender DNA Backlog Reduction Program.** Administered by the National Institute of Justice (NIJ), this program provides assistance to States that have a backlog of convicted offender samples waiting for DNA analysis. Funding is provided to perform rapid DNA analysis on the unanalyzed samples in order to be uploaded into the National DNA Index System (NDIS) through the Combined DNA Index System (CODIS). Contact the Justice Response Center at 800–421–6770.
- **Crime Identification Technology Act (CITA) Programs.** Administered throughout OJP, this initiative provides assistance to States to establish or upgrade criminal justice information systems and identification technologies and provides assistance for virtually every technology-based, criminal justice information, identification, and communications need. In the FY 2001 appropriations, funds were earmarked for the National Criminal History Improvement Program (NCHIP), which in turn provides grants to States, and for NIJ’s Crime Laboratory Improvement Program (CLIP). OJP also will use CITA funds to support projects related to the forensic sciences.

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update equipment, it would have to retest samples that had been tested using RFLP.

“CODIS became more complex and NIJ was there to help us out,” says Mark Nelson, special agent in charge of the North Carolina State Bureau of Investigation (SBI). “They helped us go from RFLP to STR. They helped us purchase equipment to make the conversion.”

Almost immediately, North Carolina SBI investigators started clearing old cases. One such case took place in 1989, when a man kidnaped and repeatedly raped a Hickory, North Carolina, woman. A suspect was arrested but cleared when his DNA sample did not match that taken from the victim.

“We really believed it was him,” says Catawba County Assistant District Attorney Jason Parker. “He’d have been a goner if it hadn’t been for DNA clearing him.”

In April 2000, the woman’s attacker was found in a North Carolina prison. The evidence was run through the State database and matched to L.K. Butler, who was serving time for similar crimes. Butler was indicted, convicted, and sentenced to another 80 years in prison.

DNA testing also cleared a series of rapes that occurred in 1986. Of the suspects, Marion Pearson appeared the likeliest to have committed a series of rapes in Morganton, North Carolina. But at the time there was no DNA analysis, only blood typing. “Pearson came closer than anyone else, but there was nothing conclusive,” Parker says.

When the State’s database came online, SBI investigators ran the evidence. It matched Pearson, who had since moved to Maryland. SBI investigators arrested Pearson in Maryland and returned him to North Carolina. But Pearson disappeared after posting bond. He was later arrested in Maryland on other charges and returned to North Carolina, where he was sentenced to 50 years in prison.

## The Price of Success

The lab improvement program has been supplemented with funding to clear an estimated backlog of 750,000 DNA samples collected from convicted offenders. Monies have been spent to send untested offender samples to private labs for DNA analysis, as recommended by the National Commission on the Future of DNA Evidence.

“As the laws change and allow for the collection of samples from a larger variety of crimes, labs are often inundated,” says Chris Asplen, the Commission’s executive director. “They may have all they can do to test samples from current cases, and may not have the resources to test samples from convicted offenders or from nonsuspect cases. These Federal dollars will help them catch up by outsourcing their backlog of DNA samples.”

### *A Helping Hand (continued)*

For more information, visit the CITA website at [www.ojp.usdoj.gov/cita](http://www.ojp.usdoj.gov/cita).

- **Crime Laboratory Improvement Program (CLIP).** Administered by NIJ, CLIP provides assistance to State and local crime laboratories both to improve and to expand their analysis capabilities, including their online capabilities, and to reduce their backlog of convicted offenders’ DNA samples within CODIS, the national DNA database. Contact the U.S. Department of Justice Response Center at 800-421-6770. (Also see the previous listing for the Crime Identification Technology Act Programs.)
- **DNA Five-Year Research and Development Program.** The goal of this NIJ program is the development of cutting-edge molecular biology methods and tools to achieve highly discriminating, reliable, economic, and rapid DNA testing approaches appropriate for forensic identity testing. Major objectives for the period from 1999 to 2003 include reducing DNA testing costs by more than 98 percent, from \$700 per test to less than \$10 per test; reducing analysis time from hours to minutes; developing inexpensive, portable, disposable DNA test kits for field use; increasing the reliability and legal credibility of DNA testing through the development of a dual-testing approach using two different methodologies (microchip devices and mass spectrometry); developing standard materials for population databases; and developing markers or techniques to be used in the unique identification of individuals.
- **Edward Byrne Memorial State and Local Law Enforcement Assistance Discretionary Grants.** These grants, provided through BJA, are awarded to State and local law enforcement, as well as private entities, for crime control and violence prevention projects. The program focuses specifically on education and training for criminal justice personnel, technical assistance, multijurisdictional projects (e.g., State records integration), and program demonstrations. Grants also support research and development projects. Contact BJA at 202-514-6638 or access the BJA website at [www.ojp.usdoj.gov/bja](http://www.ojp.usdoj.gov/bja).
- **Office of Science and Technology General and Directed Solicitations.** Administered by NIJ, this initiative supports technology research and development for law enforcement, corrections, and the forensic sciences. Contact the U.S. Department of Justice Response Center at 800-421-6770, or access NIJ’s website at [www.ojp.usdoj.gov/nij](http://www.ojp.usdoj.gov/nij) (and click on Funding Opportunities), or the National Law Enforcement and Corrections Technology Center’s website at [www.justnet.org](http://www.justnet.org).

“We never really had any funding for the number of samples that were coming in,” adds Nelson. “Our backlogs were going through the roof and our analysts felt like they were swimming upstream. NIJ came through with funding to outsource our offender samples and get our backlog down. And of course we started getting hits right away. We are now caught up, with no backlog, and have had 16 hits as a result.”

Federal funds were especially important in Florida, a State that had implemented several proactive DNA programs. Yet it was inundated with a 65,000-sample backlog when the technology changed from RFLP to STR analysis.

“It is impossible to compare the two technologies,” says David Coffman, the DNA database supervisor for the Florida Department of Law Enforcement. “It would be like going to an auto parts store and trying to find a particular Honda part number in a Mazda catalog. Rather than be ineffective for another 5 years while we reanalyzed all of our samples, we were able to use NIJ money to outsource them. The NIJ money has been instrumental. We immediately resolved six cases.”

Clearing old cases and exonerating the innocent have generated a ripple effect. The results have garnered the attention of the press and piqued the public’s interest. As a result, States have voted to provide additional funding for DNA analysis.

“We have a system that is working and State lawmakers who know it works, and they want to support this crimefighting tool,” Coffman says. “The NIJ money helped build our database, which started making us even more successful. We’ve had our own support since 1995, but once we started clearing more cases, that support grew even more.”

Advances in DNA technology grabbed the attention of Florida legislators, resulting in bills that, if approved, will allow collection of DNA samples for a variety of crimes. In Florida, DNA can be collected only in seven crimes: lewd and lascivious behavior, sexual assault, aggravated battery, home invasion robbery, carjacking, murder, and burglary. In the most recent legislative session, State lawmakers laid the groundwork for a bill that would allow collection of DNA from all convicted felons over the next 5 years.

Although this legislative support may help law enforcement and prosecutors, it can cause headaches for those who must hew to the bottom line. Similar bills have been introduced in North Carolina, Nelson says, but there is no funding to pay for them.

“We are in a severe budget crisis,” Nelson says. “We have gone from a \$1 billion surplus to an \$800 million deficit. We have seen a flurry of bills that deal with DNA. They want to increase the collection of DNA samples. It’s

an effort that is one of the top 10 priorities of the Governor’s Crime Commission. One of those bills is an all-felon bill, which would cost \$5.5 million to implement. But this State does not have the money.”

Funding for the DNA Backlog Reduction Program may mitigate some of those financial shortfalls, according to Dr. Lisa Forman, director of NIJ’s Investigative and Forensic Sciences Division. Another \$25 million infusion of asset forfeiture funds primarily will be used to pay for analysis of DNA samples in nonsuspect cases. Forman says \$8 million will go toward continuing the convicted offender backlog reduction effort, and about \$1.7 million will be spent on new quality control methods. The rest, about \$15.3 million, will fund the analysis of evidence from nonsuspect cases.

Nonsuspect cases have in recent years gained greater attention from both forensic scientists and State and Federal lawmakers. Crime labs typically prioritize evidence analysis, putting those with a known suspect at the top. Unfortunately, other cases are left to languish, often for years. “Some crime labs have rape kits that have been sitting around for 5 to 7 years,” says Paul Ferrara, director of the Virginia Division of Forensic Science.

Advances in analysis techniques have made processing faster, cheaper, and more efficient. But crime scene evidence is still harder to analyze than the pristine blood samples drawn from convicted offenders. Crime scenes invariably yield such evidence as cigarette butts, half-eaten food, and discarded clothing, the analysis of which is more complex and tedious because of the small size of the sample and its often deteriorated condition. When the evidence comes from a sexual assault, analysis also requires differential extraction, a time-consuming chemical process that separates the male and female samples. Even the costs are higher. Analysis of a convicted offender sample costs about \$50. Analysis for a rape case can cost more than \$5,000.

Crime labs still must prioritize cases, and nonsuspect evidence still takes a backseat. NIJ’s \$15 million infusion of funds intended specifically for this kind of work will be enormously beneficial.

“Crime labs, at least in my opinion, have a major crisis facing them with respect to crime scene evidence,” Ferrara says. “You can have a database of 10 million, but if you can’t analyze all the evidence from crime scenes—your nonsuspect cases—then your database is for naught. It does you no good if you don’t have the capacity to run every cigarette butt, every bloodstain, every bottle top.

“My concern is that as we train our law enforcement officers as to what kind of evidence can contain probative DNA, the number of samples submitted will skyrocket. Many officers would never have thought of picking

up cigarette butts or looking at soda bottles or beer cans as evidence. But DNA has opened up a whole new world,” Ferrara says. “Now we’re swabbing the inside of ski masks and headbands and the armpits of old T-shirts. It’s given rise to a whole new explosion of evidence. Combine that with defense lawyers who no longer question DNA but now want to know why the lab didn’t analyze every single piece of evidence because there might have been a second perpetrator, and you have a tremendous crush of samples to be run. We have to be able to run them and run them rapidly or more people are going to be victimized.”

Virginia officials have decided, as have those in many other States, to continue to outsource the analysis of

convicted offender samples and concentrate inhouse on crime scene evidence. Other States analyze both types of samples within their own forensic lab systems. Either way, most experts believe DNA analysis will continue to be vital to the criminal justice system.



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