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## Making the Case for "Genetic Justice"

Outsourcing to private DNA laboratories may be the answer

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By **Jeannine Heinecke**  
*Law Enforcement Technology*

"For every [DNA](#) analysis request completed by the largest forensic crime laboratories in 2002, nearly two requests remained outstanding. Overall, laboratories estimated they needed a 90-percent increase in full-time personnel performing DNA analysis to achieve a 30-day turnaround on requests."

This looming statement, as reported in the September 2004 Bureau of Justice Statistics (BJS) Fact Sheet, "50 Largest Crime Labs, 2002," gives a snapshot of the building DNA backlog chasm.

"The backlog is growing by leaps and bounds," says Bill Marbaker, president of the American Society of Crime Laboratory Directors (ASCLD). "We are basically victims of our own successes."

In March 2003, the Department of Justice estimated the number of backlogged DNA-convicted offender samples in the [United States](#) to be between 200,000 and 300,000, with an additional 500,000 to 1 million samples yet to be collected.

"There are just too many cases and not enough resources to have them all worked in-house," says Blaine Kern, president of Human Identification Technologies, whose company slogan is "Genetic Justice." "That is really where independent labs come in. There wouldn't be a need for the governmental crime labs to outsource to private laboratories if they were able to handle the backlog."

### Frankenstein's DNA monster

Since the advent of the [FBI](#) Laboratory's Combined DNA Index System (CODIS) in the late 1990s, DNA processing has taken on a life of its own. The system that once contained 210,000 profiles in 1999 now houses more than 4.1 million profiles as of December 2006.

Depending on state laws, DNA profiles are being gathered from a range of people — convicted offenders to arrestees. In some states samples are being taken from all felons, not just those who commit violent or sexual offenses.

"Missouri has been an all felon-offender profiling state for two years now," says Marbaker, also the assistant director for the Missouri State Highway Patrol Crime Laboratory Division. "In 2006 we had 716 offender hits against unsolved casework. The highest we ever had before we went to all-felon was 41. You can see the effect it had, but of course our database has more than quadrupled in

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size in two years, too."

Seven states currently have legislation allowing for the collection of DNA upon arrest, an additional 21 are considering such legislation.

The decision to screen all arrestees has placed an additional burden on public crime labs. In Virginia, not only are the labs responsible for testing arrestee DNA, but they also must verify if the suspect has been found not guilty or the charges dropped and remove the profile from the system.

"We've got a two- or three-week window when we take the sample, process it and search it against the database one time before we know it has to come out," explains Pete Marone, director of the Virginia Department of Forensic Science. During this time, the lab can identify if the arrestee already has a profile in CODIS and allow for the possibility of hitting on a related active or cold case.

After the two-week processing time, the Virginia labs verify the status of the arrestees with the state police department and remove the samples from the system if necessary. Marone notes that in other states, the responsibility is put on the arrestee himself to notify the crime lab that he has been exonerated and requests that the samples be removed from the system.

#### **One backlog for another**

Considering the growth in the DNA sampling pool, outsourcing to private laboratories can be what gets the DNA backlog monkey off a crime lab's back.

"Where I see the private lab's role right now is filling that gap during the governmental crime laboratories' time of need," says Kern. "They are working feverishly to increase their local capacities and trying to solve more crimes. At the same time, we can become a very valuable asset in filling the gap."

Several years ago, the Virginia legislature dedicated \$9 million to eliminating the state's DNA backlog of more than 200,000 samples in three years time. "We didn't have the man power or facilities at that point to run all those samples," says Marone. "Now we have sufficient staff and facilities to handle all the DNA database samples as they are coming through our door."

There is a Catch 22 with outsourcing offender backlog DNA samples. It has reduced the testing backlogs, but created CODIS entry backlogs.

"By being accredited, all of your information is now eligible for CODIS, but no private laboratory in the country has direct access to this database," explains Kern. "Essentially, we are creating redundancy. We're doing analysis and qualifying the samples saying they are eligible, but then the samples have to go back to the agency to be requalified."

In Marone's outsourcing experience, the state analysts had to verify every sample and review all data before it went into CODIS. "To get to the last point of pushing the button was a lot of work," he says.

According to Kern, some public labs have approached the FBI with the idea of allowing private labs to input DNA profiles directly into CODIS, but this has yet to happen. "If this were to happen, it would greatly reduce the burden on the governmental lab system and allow for greater in-house backlog reduction," he says. "Public labs would be spending less time entering CODIS profiles into the database and more time working samples."

#### **Greater capabilities**

The primary benefit of utilizing a private lab is the speed in which it can process the evidence. Kern estimates that many state labs are working with a six-month turnaround rate, and Marbaker estimates his lab is eight months behind in routine DNA work.

"It's not uncommon for a local police agency that does not have a laboratory to use a private lab because they could get the results back quicker than from their state laboratory," says Ralph Keaton, executive director of the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB).

Each private lab has its own processing times. Human Identification

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Technologies, a private forensic [DNA testing](#) and consulting laboratory located in Redlands, California, has a standard time frame of 20 business days, with as little as three business days for rush service. Tim Kupferschmid, forensics laboratory director for Sorenson Forensics in Salt Lake City, Utah, says that every 60 days his lab has a complete turn over of its case load.

Why can private labs achieve these compressed output rates? "A private laboratory is not constrained by governmental budgets that allocate positions to do the work," answers Keaton. A private lab can quickly hire personnel as the demand arises. According to Marbaker, it can take a couple years to get an individual hired and trained to where he is a fully productive DNA analyst in the public system.

But Kupferschmid cautions that even private labs can fall into the same traps as public labs and have backlogs. "If a private lab has accepted too much casework and hasn't been able to keep pace with it, then you should find another lab," he says.

Another advantage to private labs is they can provide capabilities that many public labs may not, such as mitochondrial DNA (mtDNA) testing and paternity testing.

There are three basic types of forensic DNA analysis: STR (short tandem repeat), Y-STR (STRs that occur on the male chromosome) and mtDNA. In layman's terms, STRs are repeats in the DNA pattern, with each person having different length repeats, these are individualized. Both STR and Y-STR involve extracting nuclear DNA from biological materials such as blood, semen, saliva and tissue.

When forensic cases arise where there is insufficient biological material for nuclear DNA typing, mtDNA analysis can provide valuable supplemental information, even from such limited samples as a 1/2-centimeter-long hair fragment or single tooth.

Paternity testing also is a specialized capability many public labs do not offer. "The testing is very similar, but the statistical interpretation is completely different and usually requires a different specialty," explains Marbaker.

A unique contributing factor to the DNA backlog where private labs can be of great assistance is post-conviction testing, often requested by advocacy groups and defense attorneys.

A few years ago, the Virginia lab was contacted by the Innocence Project, looking to test DNA evidence in a case that was processed previous to the advent of this technology. In this instance, and a couple others, the original offender was exonerated. Because of these exonerations, the then-governor Mark Warner directed the crime lab to process 10 percent of the applicable, previously closed cases for DNA evidence. The governor directed these samples to private labs because he did not want to impact the present-day casework of the government labs.

#### **The bottom line**

Although private labs offer several tempting benefits, they do not come free. The greatest objection to contracting independent labs is the cost. Grant funding is available to subsidize outsourcing, but in general only public laboratories have access to these funds. (See "Millions for the asking" on Page 87.) If an individual police department should choose to bypass its local or state crime lab and hire an independent lab to process DNA, the cost would come out of pocket.

In addition, Marbaker cautions public laboratories not to dedicate all their funding to outsourcing. "Outsourcing doesn't do anything to enhance the infrastructure. It doesn't solve the problem," he says. "It makes some of the symptoms go away for a while, but it doesn't get at the root problem which is you don't have enough resources to do your job."

#### **The right questions**

Once deciding to hire a private lab, there are several qualities to look for — No. 1 being accreditation.

"Accreditation gives you a certain threshold of confidence to know they are

handling the evidence correctly, have all the correct quality checks in place and are meeting certain standards," says Marone, who is the ASCLD/LAB representative for the Consortium of Forensic Science Organizations.

There are two accrediting bodies in the United States: ASCLD/LAB and Forensic Quality Services (FQS). Any lab accredited by ASCLD/LAB or FQS also meets the FBI's standards for forensic DNA testing labs, allowing the DNA they test to be submitted into CODIS.

Because one of the key advantages to outsourcing to a private lab is the reduced turnaround time, a department should inquire as to the time needed for a rush case and also standard processing rates. "The laboratory has to be able to meet your needs in your time frame," notes Marone.

Location also can be a consideration. "Since we knew we were going to have an inordinate number of samples, we wanted somebody within the state that we could literally drive back and forth to," says Marone.

Many private labs employ analysts that once worked at public labs, and in Kupferschmid's opinion, "It is very important that an independent, private lab have public lab experience, because the issues that public labs face are completely foreign in the private sector." Private labs have fewer competing events for their time and do not have the legislative hurdles to deal with.

Public lab experience also means that these analysts are better able to help investigators narrow the focus on what they need to test. "We can extract DNA from nearly anything these days, but unless we have a good working relationship with the investigator and know what questions to ask the investigator, it's not really going to help him," says Kupferschmid, a former public analyst in Maine before moving to the private sector.

"Most of the private laboratories out there today are doing very good quality work," praises Keaton.

Working together, private and governmental labs can reduce the DNA backlog and maximize DNA's crime-fighting capabilities. "Let's face it; it's all about justice," says Kern. "Our focus is putting out a high-quality product and then offering a turnaround time that really makes for efficient 'Genetic Justice.' "

#### **ASCLD/LAB-accredited labs**

At the end of January, the American Society of Crime Laboratory Directors / Laboratory Accreditation Board (ASCLD/LAB) had accredited 327 crime laboratories including 180 state labs, 98 local agency labs, 22 federal labs, 10 international labs and 17 private laboratories. Below is a list of ASCLD/LAB-accredited private laboratories that provide DNA testing services.

- The Bode Technology Group, Lorton, Virginia, [www.bodetech.com](http://www.bodetech.com)
- Crime Scene Technologies, San Diego, California, [www.cstlab.com](http://www.cstlab.com)
- DNA Diagnostics Center, Fairfield, Ohio, [www.dna-forensic.com](http://www.dna-forensic.com)  
\*\*Internationally accredited
- DNA Security Inc., Burlington, North Carolina, [www.dnasi.com](http://www.dnasi.com)
- Human Identification Technologies Inc., Redlands, California, [www.hitdna.com](http://www.hitdna.com)  
\*\* Currently seeking International accreditation
- IDENTIGENE Inc., Houston, Texas, [www.identigene.com](http://www.identigene.com)  
\*\*Internationally accredited
- LabCorp, Research Triangle Park, North Carolina, [www.labcorp.com](http://www.labcorp.com)
- Mitotyping Technologies, State College, Pennsylvania, [www.mitotyping.com](http://www.mitotyping.com)  
\*\*Internationally accredited
- NMS Labs, Willow Grove, Pennsylvania, [www.nmslab.com](http://www.nmslab.com)
- Orchid Cellmark, Princeton, New Jersey, [www.orchid.com](http://www.orchid.com)
- ReliaGene, New Orleans, Louisiana, [www.reliagene.com](http://www.reliagene.com)
- Serological Research Institute, Richmond, California, [www.serological.com](http://www.serological.com)
- Sorenson Forensics, Salt Lake City, Utah, [www.sorensonforensics.com](http://www.sorensonforensics.com)  
\*\* Currently seeking ASCLD/LAB accreditation

#### **Millions for the taking**

In 2006, the National Institute of Justice awarded more than \$73 million to help eliminate the DNA backlog. DNA casework initiatives received \$19.2 million, \$39.5 million for DNA laboratory capacity building and \$14.9 million for

convicted offender testing. Numerous DNA grant opportunities can be found at [www.dna.gov/funding](http://www.dna.gov/funding). Following is a list of available funding opportunities.

- Convicted Offender DNA Backlog Reduction
- Coverdell Forensic Science Improvement Grant Program
- Crime Victims Fund
- Debbie Smith DNA Backlog Grant Program
- DNA Laboratory Capacity Enhancement
- DNA, Missing Persons
- Edward Byrne Memorial State and Local Law Enforcement Assistance
- Forensic Casework DNA Backlog Reduction
- Forensic DNA Research and Development
- Kirk Bloodsworth Post-Conviction DNA Testing Program
- Office of Community Oriented Policing Services Funding
- Solving Cold Cases with DNA Evidence
- STOP Violence Against Women Formula Grant Program

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