

# Rapid DNA Technology to Revolutionize Arrestee Screening

**T**HE LATEST ADVANCE in DNA testing will revolutionize how arrestees are screened during the booking process. Rapid DNA technology—that returns DNA profiles in less than 90 minutes and does not require a skilled technician to operate—can be set up on-site at the jail or booking station. This allows police officers to add a DNA profile to arrest records, supplementing photos, fingerprints, and other data currently collected at booking; and to initiate a search against DNA profiles derived from evidence collected at crime scenes. This development will fundamentally change how police positively identify arrestees, develop suspects in unsolved crimes, and, most importantly, get criminals off the street before they can victimize others.

Since DNA was first used to convict a criminal in 1987 (*Andrews v. Florida*, 1988), there have been a number of incremental improvements to this important crime-solving technology. Advances in forensic tools to help detect the presence of DNA at crime scenes, laboratory instruments that are more sensitive and can detect minute amounts of residual DNA, the creation of DNA profile databases, and better training for investigators have all contributed to the solving of crimes in a more timely and efficient manner. With the launch of the national Combined DNA Identification System (CODIS) in 1998, U.S. law enforcement began to take full advantage of this powerful and effective tool in the pursuit of difficult and complex investigations. Through the use of DNA profiling and DNA databases, countless leads were generated, cases were solved, offenders were brought to trial, and victims and their families were assured justice.

Still, the process for forensic DNA testing has not changed dramatically over the years. The system still requires a trained forensic expert to perform the analysis of samples, both crime scene forensic samples and those collected from known suspects, limiting the capacity and throughput of the entire law enforcement DNA

**Rapid DNA technology offers the opportunity to generate DNA profiles at arrest, giving police a better chance of identifying criminals quickly and preventing crime.**

**Written by Louis E. Grever**

system. As every police chief knows, each DNA sample, whether it is from a known person or from a crime scene, goes into a queue for laboratory testing, and there can be thousands or even tens of thousands of equally important samples in front of the newest submission. Currently, it takes 30 to 60 days to get DNA results from known arrestees and convicted offenders before database searches are executed and that “sample to answer” time is not improving (Hayes, 2010).

## **DNA Collection at Arrest**

Why is arrestee DNA collection so important? First, consider the immediate challenge of determining the true identity of the arrestee at the time of booking. Every police officer is familiar with the problems associated with verifying the identity of an arrestee. Offenders many times provide false information and documents at the time of arrest, some even memorizing someone else’s name, date of birth, social security number, and address. Although the collection and search of fingerprints against criminal-history records is one method for identification, the collection of a DNA sample, timely generation of a profile, and search against criminal justice databases would provide one more tool available to the officer trying to verify the identity of the offender.

Another critical benefit to DNA collection at arrest is the ability to quickly assess whether a person’s DNA matches DNA evidence found at the scene of the crime. Individuals who might otherwise stand falsely accused can be more quickly eliminated as a suspect, saving investigative and prosecutorial resources, and channeling the investigation toward more fruitful avenues.

Conversely, a finding at arrest that someone’s DNA profile matches a profile derived from evidence left at the scene provides powerful information, both to investigators and later to prosecutors and judges at the arrestee’s initial hearing.

The other important benefit provided by collection of DNA samples and analysis at time of arrest will be the appreciable reduction of demand placed on crime laboratories. This reduction in demand will ensure that highly trained forensic analysts at these vital institutions are free to focus on evaluating more complex DNA evidence, such as mixed or degraded crime scene samples.

Further, there have been many reported cases where arrestee DNA profiles have been linked to DNA recovered in previously unsolved crimes and the investigations of those crimes have been furthered significantly by a “hit” on a person in the reference database—many times completely unknown to investigators working those cases. It is only logical, therefore, that future crimes will be prevented with arrestee sampling supported by near real-time analysis. Such a process will undoubtedly identify serial and repeat criminals and get them off the street.

Studies in several jurisdictions have highlighted crimes that could have been prevented if DNA samples had been collected from suspects at the point of arrest. No police officer wants to be put in the position of having to tell a victim’s family that a crime that targeted their loved one could have been prevented if a DNA match had been made earlier.

In 2005, the City of Chicago tracked the arrest and crime histories of eight offenders and determined that 60 violent crimes, including 22 murders and 30 rapes, could have been prevented if DNA had been collected and timely analysis completed at arrest instead of upon conviction. The crimes were all committed by the eight offenders studied after they had been arrested for other unrelated offenses and later released without a DNA sample taken. Unidentified suspect DNA profiles derived from evidence collected at crime scenes and implicating all eight criminals were already in the city's database at the time of those early arrests. Links to the eight offenders, arrested on multiple occasions, went undetected for months and in some cases years (City of Chicago, 2005).

In another study, officials in Maryland highlighted 20 crimes that could have been prevented if DNA samples had been collected upon arrest for just three offenders. Again, arrestee DNA collection and derived profiles would have matched evidence profiles already in the state DNA database and officers would have been able to link the offenders to past crimes. Instead, in the time between early arrests and eventual prosecution on charges that allowed for DNA sampling, the offenders committed 20 offenses, including the crimes of murder, rape, burglary, and assault that could have been prevented had sampling been allowed at their earliest arrest and booking.

### Rapid DNA Testing

On its own, collecting DNA samples at arrest is not necessarily transformative. The current model of offender DNA collection (either at arrest or upon conviction), forensic laboratory analysis, and search against CODIS admittedly solves crime. However, with 30- to 60-day DNA sample processing times, "hit" notification to investigators is not exactly timely. It should also be noted that the current process does nothing to assist officers in the positive identification of an arrestee since DNA databases are not directly connected to criminal history or fingerprint records. And sadly, even a best-case, 30-day turn around typically gives

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guilty offenders a 29 day head start on their run from authorities after pretrial release—and worse, additional opportunity to victimize more citizens.

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### Breathalyzer Analogy

The fact that Rapid DNA testing technology does not require forensic expertise to operate is critical. Modern day breathalyzers provide a good analogy: Early blood analysis instruments and the determination of blood alcohol concentration were originally the purview of highly trained laboratory technicians. Some older officers among us may remember the days when blood alcohol concentration results took days if not weeks before they were reported out by forensic laboratories. Others may recall times when, due to budget constraints and limited crime laboratory staffing, routine blood alcohol testing was made a low priority and cases were won or lost based solely on the observations and testimony of arresting officers.

Thankfully, advances in technology changed all of that and today's enforcement of drunk driving laws benefits from inexpensive, defensible

breath alcohol detection instruments that are portable and easy to operate by trained officers. In that same way, the law enforcement DNA system will become more effective when samples can be collected from arrestees by officers as part of the booking process with minimal training and searchable profiles generated in near real time. Rapid DNA technology holds the key to easier, faster, and cheaper sample analysis and the timely search of profiles against criminal justice DNA databases.

Rapid DNA testing equipment is available today, but at a price. Just as with early breathalyzers, instrument and consumables costs may seem expensive at first, but demand and full-scale production runs will bring those costs down over time. At least two companies are producing instruments—IntegenX Inc. based in Pleasanton, California, and GE Healthcare in partnership with Net Bio.

Instruments manufactured by these two companies are currently undergoing testing and evaluation at government agencies to include the FBI, the National Institute of Standards and Technology (NIST), and the U.S. Army Criminal Investigation Laboratory. That testing involves not only the evaluation of basic features and functions, but also will evaluate reliability and repeatability of results. Independent testing and validation studies by a number of early adopters and academic institutions, including the Institute of Applied Genetics at the University of North Texas, are ongoing; those results will be compared with the results of work being done by NIST and others to prove the reliability and defensibility of the technology.

The final step in the validation of Rapid DNA instruments is acceptance by the federal Scientific Working Group for DNA Analysis Methods (SWGDM) and the National DNA Index System (NDIS) advisory board. These two entities will scrutinize the results of all studies and peer reviews and make the determination if Rapid DNA instruments can be used to develop DNA profiles that can then be loaded into national DNA screening databases.

## Enabling Legislation Needed

Realizing the full potential of Rapid DNA technology is wholly dependent on enacting defensible and comprehensive enabling legislation that authorizes DNA sample collection from arrestees at the state level, mirroring current federal legislation. While all states allow for DNA collection for certain groups of convicted felons, there are still varying degrees of authorization for DNA collection upon arrest at the state level.

Under U.S. law, it is legal to collect DNA for people arrested for violations of federal laws. Many states have followed suit—27 at the time this article was written—with various requirements as to the type of qualifying crime.

Some of those state laws have been challenged, usually on the grounds that the collection of DNA and subsequent storage of an arrestee profile in a database violates the arrestee's Fourth Amendment protections against unreasonable or unwarranted search and seizure.

In California, for example, voters in 2004 approved Proposition 69, a law requiring DNA collection from every adult arrested for a felony. After the law's implementation in 2009, the American Civil Liberties Union sued, seeking to have the law overturned. In 2011, a federal appeals court upheld the law and stated that "...the government's compelling interests far outweigh arrestees' privacy concerns" (*Haskell v. Harris*, 2012).

But in Maryland, where police under state law had been collecting DNA from individuals at arrest for violent crimes, the situation has played out differently. The state's highest court initially opined that the taking of a DNA sample at arrest is unconstitutional. The case was based on an action brought by Alonzo Jay King, whose DNA sample taken at his arrest on an unrelated charge linked him to a previously reported and unsolved rape. He was later convicted in that cold case, yet not convicted of the crime for which he had actually been arrested and had his DNA sampled. The Maryland court ruled that the DNA collection upon his arrest constituted an illegal search and seizure and vacated the conviction (*King v. Maryland*, 2011).

**To take full advantage of the power of Rapid DNA profiling, changes to decades-old laws must occur.**

In a landmark 2013 decision that Justice Samuel Alito called, "...the most important criminal procedural case that this court has heard in decades," the U.S. Supreme Court reversed the Maryland decision and declared the collection of reference DNA samples from arrestees for "serious offenses" constitutional (*Maryland v. King*, 2013).

To take full advantage of the power of Rapid DNA profiling, changes to decades-old laws must occur. The path to adoption of legislation that authorizes arrestee DNA collection will hopefully track the course followed by that of legislation that authorized convicted offender DNA collection. CODIS, the software behind local, state, and national DNA databases, was initially developed and deployed as a result of the federal DNA Identification Act of 1994. The passage of that law also established the initial authorities for the collection of DNA samples from federal convicted offenders. Several years passed before states began adopting similar laws authorizing DNA databases for law enforcement purposes and the collection of samples from convicted offenders. Today, convicted offender DNA sampling laws across all 50 states and at the federal level are nearly uniform and they allow, in most cases, the sharing of DNA information between states and with the federal government. Arrestee DNA collection legislation should

follow the same path, particularly as its importance is made clear to the public.

The reality is that collection of a DNA sample at arrest, generation of a profile, searching against law enforcement databases, and storage as part of a criminal justice record is no different than what is done currently with an arrestee's fingerprints, photograph, and biographical information. That information is routinely collected and stored at the time of arrest and has been found to be proper and constitutional across the board. Performing DNA collection at the time of arrest would simply augment the standard booking procedure, rather than radically changing it. Additionally, laws in each state and at the federal level provide mechanisms for expungement of records should a person be falsely accused, and they petition to have their information purged from law enforcement databases.

Further, if Rapid DNA testing is done in the initial phase of the booking process, results can be generated while other steps are being completed. In such a scenario, the accused stands to benefit from timely elimination as a suspect in the charged crime and quick release if the profile does not match a forensically developed suspect profile. Arresting officers stand to benefit from the establishment of the true identity of the arrestee by multiple biometrics. Investigators stand to benefit from leads that would be generated if an arrestee's profile matches forensically derived profiles entered into CODIS by crime laboratory DNA examiners. Prosecutors and judges will stand to benefit from more timely, accurate, and complete information that can be considered at the arrestee's initial court appearance. The criminal justice system would benefit as a result of efficiencies gained by the more focused and effective use of scarce investigative resources and through potential savings realized through plea agreements obtained when DNA definitively links an offender to a crime. And the public most certainly benefits from the solving of crime in a more timely manner and the prevention of crime by taking serial and repeat offenders off the street at first arrest.

## Conclusion

Implementing Rapid DNA testing at the point of arrest will not simply evolutionize our criminal justice system, it will revolutionize it. Police officers will gain the ability to accurately identify offenders and deny criminals the opportunity to commit more crimes during pretrial release. Rapid DNA testing can easily be integrated as a fourth component in the booking process, supplementing the collection of biographical information, photographs, and fingerprints already collected as standard protocol today.

Rapid DNA provides the clear potential to enhance offender identification, save lives, prevent rapes, and solve violent crimes. Rapid DNA analysis at time of arrest stands as a very efficient and cost effective way of reducing crime and, as one study suggests, will quickly pay dividends. The law enforcement community should embrace Rapid DNA technology and strongly support arrestee screening as potent tools in improving our ability to keep the public safe. ☺

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## About the Author

*Louis E. Grever recently retired as the Executive Assistant Director of the Science and Technology Branch, Federal Bureau of Investigation, after 24 years of service. He currently serves as a Senior Vice President for Qbase, LLC of Reston, Va., and is a*

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