



## State of North Carolina

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February 1, 2015

North Carolina Senate President Pro Tempore Phil Berger  
North Carolina House of Representatives Speaker Tim Moore  
Co-Chairs, Joint Legislative Commission on Governmental Operations

Senator Buck Newton  
Representative James Boles, Jr.  
Representative Pat Hurley  
Co-Chairs, Joint Legislative Oversight Committee on Justice and Public Safety

North Carolina General Assembly  
Raleigh, North Carolina 27601-1096

Re: Targeting Violent Criminals by Investing in DNA

Dear Senator Berger, Speaker Moore, and Members of the General Assembly:

Pursuant to applicable law, please find the attached report from the North Carolina Department of Justice on the NC Crime Laboratory's 2014 operations and required statistics relating to the DNA Database and DNA databank.

Thank you for the opportunity to provide this information. We would be happy to respond to any questions you may have regarding this report.

Very truly yours,

*Kristi Jones*  
Kristi Jones  
Chief of Staff

cc: Kristine Leggett, NCGA Fiscal Research Division



# **North Carolina Department of Justice**

Targeting Violent Criminals by Investing in DNA

February 1, 2015

## **Targeting Violent Criminals by Investing in DNA**

While traditional investigations and detective work will always be integral to law enforcement, fighting crime has become increasingly reliant on technological and scientific advancement. DNA is one of the most important crime fighting tools of modern times. Advances in technology have benefited the criminal justice system in many ways. In countless cases, DNA has identified the suspects, convicted the guilty, cleared suspects, and brought closure to victims and their families. In other cases, DNA has exonerated the innocent.

Chewing gum, hair and even cigarette butts left at a crime scene can lead detectives to the right suspect thanks to DNA analysis. DNA, or deoxyribonucleic acid, is a unique genetic fingerprint found in cells of the human body. Just a tiny trace of the criminal's saliva or blood left behind can yield a DNA profile, which then can be compared to DNA samples from known criminals, arrestees or other crime scene evidence for a match.

DNA technology is perhaps most promising when used to solve crimes without an apparent suspect. In a rape case, for example, the victim may not be able to identify the attacker. When investigators examine evidence collected from the victim, they are often able to obtain a DNA sample from the attacker. This evidence can then be compared to millions of DNA profiles included in the state and national DNA database, called the CODIS system. If the comparison yields a match to an offender, the rapist can be identified and brought to justice.

The North Carolina State Crime Laboratory (NCSCCL) uses DNA technology to solve crimes and bring justice to victims by: 1) expanding the DNA database to include DNA samples from all convicted felons and certain arrestees; 2) making sure that submitted no-suspect rape kits are quickly screened and analyzed, with any DNA evidence uncovered used to search the DNA database to pinpoint suspects; 3) speeding the review and uploading of convicted offender and arrestee samples into the DNA database; and 4) helping local law enforcement respond to cold case DNA database hits.

The NCSCCL had a total of 273 DNA database hits in 2014. Since criminals, and especially rapists, often strike again, a database "hit" can crack a cold case.

The State Crime Laboratory continues to make progress in screening, processing, analyzing and conducting subsequent DNA database comparisons to crime scene evidence. In no-suspect cases, a DNA analyst can compare a DNA profile developed from crime scene evidence to more than 280,000 DNA profiles in the Crime Lab's DNA database. If a profile match occurs, this is commonly referred to as a CODIS hit, meaning a match to the Combined DNA Index System.

Once a CODIS hit is made, it must be confirmed according to FBI requirements by re-analyzing the original sample taken from the convicted offender or arrestee, which is stored at the State Crime Laboratory. The thumbprint taken at that time is also compared to the convicted offender's or arrestee's fingerprints on file in the State Bureau of Investigation (SBI) fingerprint database to confirm that the convicted offender or arrestee was the person giving the DNA sample. After this confirmation is complete, a search warrant is written and served on the convicted offender or arrestee to obtain another sample of DNA. This sample is analyzed to definitively confirm that indeed was the person whose DNA was identified in the original crime scene evidence.

The successful resolutions to cases, using the database, foster an increasing demand for DNA services from local law enforcement and prosecutors.

Law enforcement and prosecutors believe North Carolina should continue to invest in the NC State Crime Lab and the State Bureau of Investigation to meet the growing demands from law enforcement, prosecutors and the criminal justice system. On February 1, 2011 law enforcement began collecting DNA from certain arrestees pursuant to the DNA Database Act of 2010, adding to the successes and the workload.

## Summary of the Operations of the DNA Database Section for 2014

**CODIS Hits** for 2014: 273 (234 hits to Convicted Offenders; 32 hits to Arrestee samples; 7 Forensic hits)

**Forensic Samples** Uploaded: 625

*\*Forensic Samples are uploaded to CODIS as a result of forensic DNA analysis by the Forensic Biology Section*

**Convicted Offenders** Uploaded: 10,016

**Arrestee Samples** Uploaded: 6,983

### Trends from 2012-2014

	2014	2013	2012
CODIS Hits	273	274	199
Forensic Samples Uploaded	625	285	195
Convicted Offenders Uploaded	10,016	**21,795	9,031
Arrestee Samples Uploaded	6,983	**9,183	3,153

*\*\*Numbers uploaded for 2013 were significantly higher due to the elimination of the pending samples in that calendar year. No sample inventory accumulated in 2014.*

### Expunction of arrestee DNA records

The number of DNA records-from-arrestee expunged in 2014: **751**  
(2,830 processed through completion; 4,645 received for the year)

A major responsibility, workload and cost of the DNA Database Section is arrestee expungements. Of the **4,645** expungements received in 2014, **2,830** were completed in the calendar year. **751** requests were approved and **2,079** were denied. The expunction process and notification process for all approved and denied expungements were completed within the statutorily required 90 days. Additionally, the Database Section has received a number of requests that could not be processed because no sample had been received for the specific arrest.

Numerous DNA samples were rejected in 2014 because they did not meet the statutory standards for collection pursuant to N.C.G.S. 15A-266.3A. For example, the laboratory rejected samples submitted for accessory after the fact to homicide (GS 14-7), assault by strangulation (GS 14-32.4(B)), and common law robbery (GS 14-87.1-sentencing provision), offenses for which arrestees are not required to provide DNA samples under NC law.

### 2014 DNA Database Expenses (Convicted Offender and Arrestee Samples)

Staff Costs to Process DNA CODIS Samples	<b>\$ 1,353,976</b>
Private Laboratory expenses to process DNA CODIS Samples	<b>\$ 459,777</b>
Other operating expenses (e.g. supplies)	<b>\$ 298,845</b>
Total 2013 DNA Database Expenses	<b>\$ 2,112,598</b>

## **Lean Six Sigma**

A forensic laboratory workflow consultant, which completed its work between January and May, 2013, brought a private sector perspective to Crime Lab operations. The consultants introduced the Crime Lab to the Lean Six Sigma methodology developed by the Toyota and Motorola corporations. Using “lean” principles to “remove the unnecessary” and “six sigma” concepts to “improve the necessary,” Crime Lab scientists were successful in identifying potential avenues for shrinking Crime Lab processing time.

As a result of the Lean Six Sigma project, work in the DNA Database was strategically redistributed with dramatic results in 2013. Lean Six Sigma practices continued in 2014 and with over 25,000 samples received in the calendar year, the section maintained approximately 3,450 samples in-process at all times with no inventory accumulating.

## **Arrestee/Convicted Offender Collection Kits**

The State Crime Laboratory continues to provide the standardized Arrestee/Offender DNA collection kit which was designed and initially distributed to all law enforcement in 2010. The Laboratory sends collection kits to law enforcement agencies upon request. This kit will continue to be used specifically for the collection of DNA from certain convicted offenders and arrestees.

In keeping with Lean Six Sigma principles and in an effort to streamline processing and increase efficiency within the Database Section, preliminary discussions were held in the fall of 2013 between the Laboratory and the Department of Public Safety in an effort to have all correctional facilities begin using the standardized cheek cell collection kit. The Laboratory provided 10,000 kits to DPS to facilitate the standardized DNA collection. Training sessions were conducted in early 2014 and the Laboratory began providing the Department of Public Safety/Adult Corrections with Convicted Offender Collection kits in early 2014. State-wide implementation using these kits began within DPS in May of 2014.

## **Expungement Procedure**

The State Crime Lab continues to follow its FBI approved expungement procedure and expunge qualifying Arrestee DNA profiles upon receipt of the AOC verification form as directed by G.S. 15A-266.3A. If the arrestee qualifies for expungement, the DNA samples will be removed from the DNA Databank and destroyed. Also, the DNA record will be removed from the DNA Database and CODIS. The individual will be notified by letter whether or not his/her sample qualified for expungement. All expungements completed in 2014 were completed within the statutorily required 90 day time period with notification being sent to the subject.

As directed by G.S. 15A-266.5 (d), the Department of Justice and the Administrative Office of the Courts (AOC) have studied options for automating the expunction process and will continue to explore options to complete this directive.

AOC has developed and implemented an automated reporting system to notify the District Attorney (DA) of cases potentially eligible for DNA expunction, from which the DA may verify the cases' eligibility.

### **In-House Analysis**

The Database Section currently utilizes the Qiagen Universal platform on a weekly and monthly basis to analyze the quality control samples for each shipment of database samples outsourced to the vendor laboratory.

Section members evaluated and began planning for an in-house validation of a new chemistry kit using state of the art capillary electrophoresis instrumentation in 2013. Two megaplex kits with the increased number of federally mandated core CODIS loci were evaluated and kit selection was made in the fall of 2014. The implementation of this new chemistry will permit analysts in the section to process offender and arrestee samples in-house thereby eliminating the need to outsource the samples to a vendor laboratory. This validation will be completed in early 2015.

### **ISO 17025**

The Database Section received full accreditation under FQS/ISO 17025 in 2013. The ISO/IEC 17025 procedures are the highest international standards and protocols applicable to forensic science laboratories.

### **Personnel**

The Database Section is currently fully staffed with no scientist vacancies.

## **ATTACHMENT I**

### **DNA COLLECTION: HOW IT WORKS**





## **DNA Collection Upon Arrest: How it works**

DNA collection upon arrest saves lives, prevents violent crime by repeat offenders, saves investigative resources, improves ID procedures, reduces misidentification, reduces convictions based on false confessions, and clears cold cases.

Nearly half the states have enacted laws requiring collection of DNA upon arrest, as has the U.S. government.

### **How it works in North Carolina:**

- During certain felony arrests, law enforcement will take a DNA sample just as they do fingerprints using a kit provided by the NC State Crime Laboratory (NCSCL)
- The cheek swab goes to the NCSCL, which logs the sample, verifies the eligibility of the sample, and then prepares and sends the sample to a third party laboratory for analysis.
- That analysis is 100% quality assurance reviewed by a qualified NCSCL forensic analyst prior to entry into the DNA database as per federal requirements.
- The DNA data is uploaded to state and national databases to search for matches to cold cases.

### **Background on the NC State Crime Lab (NCSCL) responsibilities:**

The NCSCL currently uses a third party lab for the analysis of convicted offender and arrestee samples. Crime Lab experts expedite analysis of crime scene evidence that may contain DNA that is run against the database of convicted offenders and arrestees so they can identify the perpetrator.

NCSCL staff will receive every sample, enter the sample data, verify the sample was taken from a suspect accused of a qualifying offense, and prepare the sample for shipment to the vendor lab.

Matches identified between a DNA sample and the DNA database require working with local law enforcement agencies to identify the suspect. Fingerprint collection is required in the DNA collection kit as a secondary resource to confirm identity.

If a person is permitted by court officials to expunge their DNA profile from the database (due to dismissal or acquittal or other qualifying event), the NCSCL removes it.

## **FBI Director's Quality Assurance Standard No. 17 Requires:**

**8.1.3** - Prior to the upload or search of DNA data, a 100% quality assurance analysis review of a vendor laboratory's DNA data shall be performed by an analyst by the NDIS participating laboratory (NCSCL Crime Lab) who is qualified in the technology, platform, and typing amplification test kit used to generate the data and participates in the laboratory's proficiency testing program.

## **NC Offender Hit to NC Case: How it Works Now:**

CODIS State Administrator at NCSCL notifies NCSCL Database Manager of hit. NCSCL Database Manager starts the offender/arrestee confirmation process:

- Requests NCSCL-Subject Information Assessment — verifies that there is a qualifying offense, and verifies that the offender/arrestee was not incarcerated at the time of the offense.
- Requests NCSCL fingerprint verification— NCSCL Latent Evidence or qualified DNA Analysts within the Database verifies that the fingerprints submitted with the offender/arrestee sample match those on file for that individual.
- Requests confirmation of offender/arrestee sample — DNA Database Analyst pulls the offender/arrestee sample and re-runs the sample to ensure that the profile matches what was uploaded to the database, data is reviewed.

Once the confirmation process is done, the Database Analyst notifies the NCSCL CODIS State Administrator of the completed confirmation. The CODIS Administrator then notifies the investigating agency of the offender/arrestee's identity. This gives investigators probable cause to obtain a standard (confirmation sample) from the individual.

The investigating agency obtains a search warrant, often with SBI/NCSCL assistance, and obtains a DNA standard from the suspect which is then submitted to the NCSCL case analyst.

The NCSCL case analyst generates the profile for the DNA standard and compares this to the original crime scene evidence that was uploaded to CODIS. A case report is generated as to this match.

**ATTACHMENT II**

**DNA FLOW CHART**



# North Carolina State Crime Laboratory Forensic Biology and DNA Database Flow Chart

