



# **Department of Justice**

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**STATEMENT OF**

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**BEFORE THE**

**SUBCOMMITTEE ON CRIME, TERRORISM, HOMELAND SECURITY  
AND INVESTIGATIONS  
COMMITTEE ON THE JUDICIARY  
U.S. HOUSE OF REPRESENTATIVES**

**FOR A HEARING CONCERNING**

**FBI'S PLANS FOR THE USE OF RAPID DNA TECHNOLOGY IN CODIS**

**PRESENTED**

**JUNE 18, 2015**

**Statement of Amy S. Hess  
Executive Assistant Director, Science and Technology Branch  
Federal Bureau of Investigation  
Before the Subcommittee on Crime, Terrorism,  
Homeland Security and Investigations  
Committee on the Judiciary  
U.S. House of Representatives  
June 18, 2015**

Good morning Chairman Sensenbrenner, Ranking Member Jackson Lee, and members of the Subcommittee. Thank you for the opportunity to provide an update on the Federal Bureau of Investigation's (FBI) efforts relating to Rapid DNA to increase the speed and effectiveness of Combined DNA Index System (CODIS) and the National DNA Index System (NDIS).

Over the last three decades, the FBI has been developing its CODIS program to assist Federal, State, Local, and international forensic laboratories in databasing their DNA records for law enforcement investigative purposes. While initial efforts focused on Restriction Fragment Length Polymorphism (RFLP) technology, the CODIS program has expanded to incorporate Polymerase Chain Reaction Short Tandem Repeat (PCR STR) and mitochondrial DNA technologies as each new technology matured and provided the DNA quality demanded of a nationwide law enforcement database. Each of these technologies was implemented pursuant to the national Quality Assurance Standards (QAS) issued by the FBI Director in accordance with the Federal DNA Identification Act of 1994 ('Federal DNA Act,' 42 U.S.C. § 14131 et seq.).

Our interest in incorporating new developments and enhancing the effectiveness of CODIS is balanced against the importance of preserving this important investigative tool and the quality and integrity of the National DNA Index System (NDIS). A brief update on our CODIS program and the National DNA Index System will provide a background for the FBI's efforts related to Rapid DNA technology.

*The Combined DNA Index System (CODIS) & National DNA Index System (NDIS)*

The acronym "CODIS" describes not only the software used to maintain and operate law enforcement DNA databases, but also the FBI's program of software support and training for Federal, State, Local, and international forensic laboratories. The acronym "NDIS" stands for the National DNA Index System or National DNA database, the highest level of the CODIS hierarchy (National, State, and Local).

One of the underlying concepts behind the development of CODIS was to create a database of a State's convicted offender profiles and use it to identify suspects for crimes in which there are no suspects. Historically, forensic examinations were performed by laboratories if evidence was available and there was a suspect in the case. Beginning in the early 1990s, states began to create databases of the DNA profiles of convicted sex offenders and other violent criminals. The databases allowed Federal laboratories to analyze those cases without suspects and search those DNA profiles against the database of convicted offenders and other crime

scenes and determine if a serial or recidivist rapist was involved. It is expected that this new tool will enable forensic laboratories to generate investigative leads or identify suspects in cases, such as stranger sexual assaults, where there may not be any suspects.

An identification tool that was initially thought to benefit the investigation of sexual assault cases has proven to have wider application in the investigation and prosecution of crimes. States have observed this firsthand with their CODIS hits and sought to expand coverage of their databases beyond convicted sexual offenders - first to more serious violent felony offenders, then all felony offenders, and now to persons arrested for sexual offenses and, in many states, persons arrested for any felony offense. Currently, twenty-six states, the Federal government, the Department of Defense, and Puerto Rico upload DNA profiles of various categories of arrestees to NDIS. Twelve states are collecting DNA samples from all felony arrestees and another fifteen states are authorized to collect DNA samples from persons arrested for serious felonies, such as murder, manslaughter, kidnapping, sexual assault, robbery, and burglary. Another dozen states have legislation pending to authorize the collection of DNA samples from arrestees or to expand their current coverage of arrestee sample collections.

A recent hit to a 20-year-old sexual assault illustrates the value in expanding the law enforcement DNA collection programs: A sexual assault evidence kit collected immediately after a 1995 assault in New York City's West Village was tested in 2001, and the resulting DNA profile was entered into CODIS. The prosecutor's office issued a "John Doe" indictment in 2003. This January, the alleged perpetrator was arrested in Florida for an aggravated battery charge. The alleged perpetrator's sample collected at the time of his arrest matched to the 1995 sexual assault and he has been extradited to New York. In this example, the expanded scope of collection, the commitment to analyze sexual assault evidence kits and the use of a John Doe indictment cooperatively resulted in information necessary for the investigation/prosecution of this serious offense.

The CODIS software is used to maintain these DNA databases and search the DNA profile against the DNA profiles of convicted offenders/arrestees and other crime scenes. For example, a DNA profile of a suspected perpetrator is developed from the sexual assault evidence kit. If there is no suspect in the case or if the suspect's DNA profile does not match that of the evidence, the laboratory will search the DNA profile against the Convicted Offender and Arrestee Indices. If there is a match in the Convicted Offender or Arrestee Index, the laboratory will obtain the identity of the suspected perpetrator. If there is no match in the Convicted Offender or Arrestee Index, the DNA profile is searched against the crime scene DNA profiles contained in the Forensic Index. If there is a match in the Forensic Index, the laboratory has potentially linked two or more crimes together and the law enforcement agencies involved in the cases are able to share the information obtained on each of the cases.

The FBI Laboratory works closely with the DNA and CODIS communities as well as our other stakeholders, such as laboratory accrediting bodies, law enforcement, defense attorneys, and prosecutors, to evaluate new technologies and procedures for the CODIS program (e.g., familial searching, NDIS enhancements, Rapid DNA). Over the years, the CODIS software has been updated to include the collection and maintenance of additional data elements to facilitate missing person searches, upgraded telecommunications circuits, and routers, to name a few.

Many of these CODIS technologies and procedures included consultation with the affected stakeholders, software development, testing, evaluation, implementation planning, and user training; processes that the FBI continues to follow for Rapid DNA.

CODIS is installed in approximately 200 Federal, State, and Local forensic DNA laboratories nationwide. The FBI provides the CODIS software to public forensic DNA laboratories that are accredited, that follow the FBI Director's Quality Assurance Standards, that are audited annually, and that agree to comply with the Federal DNA Act for participation in NDIS. To date, CODIS has generated over 285,000 investigative leads for law enforcement. All 50 states, the FBI, the U.S. Army Criminal Investigation Laboratory, and Puerto Rico contribute DNA records to and participate in the National DNA Index System. As of June 1, 2015, NDIS contains almost 14 million offender/arrestee DNA records and over 630,000 forensic (crime scene) DNA records.

### *Rapid DNA Analysis/Technology and CODIS*

The FBI uses the term "Rapid DNA analysis/technology" to describe the fully automated (hands-free) process of developing a CODIS Core Short Tandem Repeat (STR) profile from a reference sample buccal swab. The 'swab in – profile out' process consists of automated extraction, amplification, separation, detection, and allele calling without human intervention. The FBI's objective for Rapid DNA technology is to generate a CODIS-compatible DNA profile and to search these arrestee DNA profiles within two hours against unsolved crime (forensic) DNA while an arrestee is in police custody. Rapid DNA technology has been designed for use within and outside the forensic DNA laboratory, as the Rapid DNA instruments are self-contained machines that require no human intervention beyond the loading of the DNA samples and analysis cartridges into the machines.

Following any legislative authority, the FBI envisions Rapid DNA integration occurring in two-phases. Phase 1 involves the booking station CODIS enrollment and searching of Rapid DNA profiles. Phase 2 of integration is the direct "hit notification" to booking stations and investigative agencies. The initial (Phase 1) impact of Rapid DNA analysis in the booking station will be the elimination of the weeks-to-months it currently takes for arrestee samples to be mailed, received, inventoried, and analyzed for registration in the CODIS system. The eventual real time notification (Phase 2) of an arrestee's DNA hit to an unsolved case is expected to conserve valuable investigative resources and focus them on specific arrestees. Equally as important will be the protection of the public when perpetrators are identified at the point of collection before being released back into their communities at the completion of the normal booking process. Rapid DNA CODIS registration will not lengthen the booking process.

The FBI initially established a Rapid DNA initiative in 2006 and partnered in 2008 with the Departments of Defense and Homeland Security on the development of point-of-collection DNA analysis for the production of CODIS DNA profiles (containing the 13 CODIS Core Loci) within a two-hour period. In 2010, the Criminal Justice Information Services' Advisory Policy Board ('CJIS APB', a Federal Advisory Committee established by the FBI) established a Rapid DNA Task Force, and the FBI's Rapid DNA Program Office was created within the FBI Laboratory Division to coordinate the Laboratory and CJIS Division's Rapid DNA activities.

These groups have provided the FBI with recommendations that we have adopted for our Rapid DNA implementation, such as the use of the State Identification Number (SID) as the cornerstone identifier for Rapid DNA profiles and the addition of a data element to an individual's criminal history record to indicate whether there is a DNA profile already in CODIS, information which will assist States in determining if a DNA sample should be collected at arrest.

For implementation within an accredited forensic laboratory, the Scientific Working Group on DNA Analysis Methods (SWGDM) empanelled a Rapid DNA Committee to review and evaluate whether additional quality measures were necessary to ensure the accuracy and reproducibility of the records produced by the Rapid DNA instruments. Based upon recommendations received from SWGDAM, the FBI issued an Addendum to the Quality Assurance Standards for DNA Databasing Laboratories, required by Federal law, providing a foundation for implementation of Rapid DNA within an accredited forensic DNA laboratory.

The FBI Laboratory is also developing CODIS software modifications to facilitate the searching of Rapid DNA instrument-generated DNA profiles against forensic DNA records. Along with these development efforts, steps are being taken to identify information technology enhancements needed for State criminal history record repositories, booking stations, regional, county, and local jails, to comply with FBI CODIS requirements for uploading DNA records generated at the time of arrest. As noted previously, Rapid DNA technology has been designed for both laboratories (approximately two hundred forensic DNA laboratories participating in CODIS) as well as law enforcement booking agencies across the nation (potentially thousands of law enforcement booking facilities).

The CJIS and Laboratory Divisions are working together to determine the interfaces necessary for the integration of the Rapid DNA components into the criminal history record and booking station infrastructure originally established for the Automated Fingerprint Identification System (AFIS). As one example, integration of the Rapid DNA instruments with CODIS and Arrestee State Identification Numbers is necessary to facilitate the notification of CODIS hits to law enforcement agencies in order to act on investigative leads. The FBI Laboratory's Rapid DNA Program Office is working with the CJIS APB's Rapid DNA Task Force to plan Rapid DNA workflows and develop requirements for implementation.

### *Implementation Next Steps*

The Federal DNA Act requires that the DNA records maintained at NDIS be generated by accredited laboratories in compliance with the FBI Director's Quality Assurance Standards (42 U.S.C. §14132(b)). Rapid DNA technology has been designed for use by law enforcement agencies at the point of booking for integration following live scan fingerprint enrollment of an arrestee. Thus, statutory authorization for the use of FBI approved Rapid DNA instruments by criminal justice agencies would be needed before the DNA records generated at police booking stations can be searched at NDIS.

A further phase of the efforts described above, which we hope to achieve within the next several years, will include pilot projects within major metropolitan police departments to test and

evaluate the potential use of these Rapid DNA instruments and the searching of these DNA records through CODIS during the booking process, should the pilot programs be successful. In addition to legislative, validation, testing, evaluation, standards, and software issues, there are a number of issues relating to NDIS approval/certification of Rapid DNA instruments and training of law enforcement personnel. These issues must be resolved prior to implementation so that this new technology is used in a manner that maintains the quality, integrity, and “sterling reputation” of CODIS and the National DNA Index System, as emphasized in previous statements by the FBI Director before the House Appropriations Committee.

If Rapid DNA technology can be implemented responsibly at a broader scale, the use of these instruments is expected to alleviate the burden on State DNA laboratories for the analysis of arrestee DNA samples. As evidenced by the separate standards for databasing and forensic DNA laboratories, however, there are differences between reference arrestee/offender samples and crime scene (forensic) samples.

### *Conclusion*

CODIS has demonstrated its use as an investigative tool for twenty-five years. The FBI is committed to the effectiveness of CODIS and we are investigating the potential to accommodate Rapid DNA technology in CODIS because we believe that the efficiencies obtained from the real time analysis of an arrestee’s DNA sample has tremendous potential to improve public safety by focusing law enforcement investigative resources and assisting in identifying putative perpetrators before they are released from custody. Incorporating Rapid DNA technology in CODIS will involve a much larger segment of the criminal justice community than has previously been engaged with the CODIS Program and we are making every effort to include representatives of this new constituency (law enforcement booking stations) in the design, planning, and implementation stages of this effort.

We appreciate the opportunity to appear before this Subcommittee and provide this update on CODIS and our efforts to incorporate Rapid DNA technology into the CODIS program. I am happy to answer any questions you may have. Thank you.