

**Rapid DNA Report from the Illinois State Police**

**Pursuant to House Joint Resolution 7**

**9-25-19**

This report is issued pursuant to House Joint Resolution 7. The resolution required the Illinois State Police (ISP) to review and evaluate its varied duties and responsibilities to determine the most effective and efficient use of Rapid DNA technology and recommend improvements to Illinois' DNA submission laws with the goal of taking full advantage of Rapid DNA technology throughout Illinois.

### **The FBI and Rapid DNA**

The ISP DNA laboratories operate in accordance with DNA analytical and administrative standards established by the Federal Bureau of Investigation (FBI). The FBI requires all forensic DNA laboratories to adhere to the applicable FBI Quality Assurance Standards (QAS) in order to be eligible to use the Combined DNA Index System (CODIS) or National DNA Index System (NDIS), to meet International Organization for Standardization (ISO) accreditation requirements, and to be eligible to receive federal DNA grant funding. The DNA Identification Act of 1994 established standards that laboratories conducting forensic DNA analysis must follow in order to be eligible to enter profiles into CODIS. In order to maintain CODIS eligibility in the state and national systems, the ISP must follow and adhere to all aspects of the QAS and requirements established by the FBI. One of those requirements is that the ISP must establish a State CODIS Administrator position responsible for maintaining the state's CODIS database and ensure the ISP and other Illinois CODIS-participating laboratories are following all standards and procedures set forth by the FBI for this purpose. The ISP laboratories strictly follow these FBI requirements when performing the statutorily-mandated forensic activities of conducting DNA analysis of evidence in criminal cases, analyzing DNA samples from convicted felons and other eligible individuals for upload into CODIS, as well as in the overall administration of Illinois' CODIS database.

The Rapid DNA Act of 2017 (Public Law 115-50), which amended the DNA Identification Act of 1994, authorized the FBI to issue standards and procedures for the use of Rapid DNA instrumentation in forensic laboratories and booking stations. Since that time, the FBI has been working toward testing and implementation of this new technology. The Rapid DNA Act of 2017 did not contain mandates for individual states to implement Rapid DNA; however, since all states participate in CODIS/NDIS, they will be expected to adhere to the standards and procedures that the FBI develops regarding the use of Rapid DNA, whether used in forensic laboratories or booking stations, if DNA profiles they develop through this technology are to be uploaded and searched in CODIS.

### **Rapid DNA on Reference Samples**

Rapid DNA, as defined by the FBI, is a term used to describe the hands-free, fully automated process of developing a DNA profile from a known reference sample buccal (cheek) swab without intervention from a forensic scientist. The FBI's definition of Rapid DNA is so restrictive because the FBI's current development and validation efforts have been focused on DNA samples obtained from known individuals. The FBI chose these types of samples for initial Rapid DNA implementation because they are taken directly from a particular individual, they contain a sufficient amount of DNA, and they **are not** mixtures of DNA profiles which would require interpretation by a trained forensic scientist. **Currently, these are the only samples processed using a Rapid DNA instrument that are approved by the FBI for direct CODIS entry.**

### **Rapid DNA on Crime Scene Samples**

Rapid DNA systems **are not** currently authorized by the FBI for use on crime scene samples, for the purpose of uploading and/or searching in CODIS. Due to the nature of crime scene samples, they can

vary greatly due to the substrate, age of the sample, environmental exposure, and other factors; these factors affect the amount and quality of DNA present on the sample and make analysis and interpretation of analytical results more challenging. One of the most significant reasons why crime scene samples are not eligible for Rapid DNA systems is that they often contain mixtures of DNA from more than one individual; DNA mixtures require interpretation by a trained forensic scientist. Since there is always a potential that a CODIS search may be needed to help identify a potential suspect in a crime, the ISP's protocols must ensure any DNA profile developed from crime scene evidence is analyzed in accordance with FBI standards in order to be eligible for CODIS entry. Those standards state that such evidence must be processed by an accredited forensic DNA laboratory, which is audited using the FBI QAS for Forensic DNA Testing Laboratories. While the FBI is still pursuing the eventual use of Rapid DNA systems for crime scene samples, they recognize there are many challenges that must be overcome before this can be approved.

### **Current ISP Analysis of Crime Scene Samples**

Until such time as crime scene samples are eligible for processing on Rapid DNA instrumentation the ISP will continue to process crime scene samples using approved technologies. As new technologies are developed and approved by the FBI for use on crime scene samples, the ISP validates and implements them in its case-working laboratories across the state to meet current FBI requirements and to enhance ISP's analytical capabilities. Over the years, these enhancements have included new analytical chemistries, new or updated software, and new instrumentation.

Currently, the ISP employs a total of 63 fully trained forensic scientists working in the Biology section (which includes both screening and DNA analysis). Based on the number of case submissions, current technology, and other factors, the ISP has determined a staffing level of 90 scientists is needed, supported by evidence technicians, technical DNA managers, clerical and maintenance personnel, to not only keep up with new case submissions, but to reduce the backlog of cases awaiting analysis in the Biology section. In FY 19, the ISP hired five additional Biology Forensic Scientist Trainees, who began training in December 2018; one has since resigned with the remaining four trainees scheduled to complete training in early summer 2020. Additionally, the ISP is currently in the process of hiring 10 more Biology Forensic Scientist Trainees, with an anticipated hire date of late 2019/early 2020. Assuming no additional resignations or retirements, this would bring the total number in the Biology section to 77 forensic scientists. The ISP has plans to hire additional forensic scientists for this section every year, until sufficient staffing is achieved and/or maintained to provide timely analysis on all submitted evidence.

During FY19, the ISP expended a total of \$20.5 million in state funds on the Biology program. This figure is 16.5 percent higher than the \$17.6 million expended in FY18. As it has for many years, the ISP continues to aggressively pursue federal DNA grant dollars to supplement state funding to aid in addressing the Biology backlog and to build in-house capacity.

### **Barriers and Choke Points Impacting ISP Laboratories**

Barriers and choke points in the ISP's Biology program, which impact the ability to address the backlogs and produce critical investigative leads in a timelier manner include factors both internal and external to the ISP. Delays in the current hiring process create one choke point. The overall state hiring process is cumbersome, and when coupled with the ISP's internal background check requirements, the entire process to hire a forensic scientist takes about 6-9 months. This is in addition to the approximately 19-

month Biology training program. The ISP is actively working with CMS and others to identify and implement mechanisms to improve various aspects of the hiring process. Support for ISP to hire additional forensic scientists, evidence technicians, and forensic managers is also necessary to overcome staffing challenges.

Another choke point involves funding for DNA analysis. In FY19, due to a restructuring of the DNA grant award process by the National Institute of Justice, the ISP saw a reduction in the amount of DNA grant funds awarded. In FY19, the ISP spent \$1.9 million in federal DNA grant funds, which is a 26.9 percent decrease from FY18 (\$2.6 million). Sufficient levels of both state and federal funding must be maintained in order for ISP to effectively meet the forensic DNA demands of the Illinois criminal justice system.

One additional choke point unique to Illinois is its lengthy and complex state procurement process. DNA equipment and commodities are expensive. Some DNA commodities have a short shelf life before expiration; therefore, large quantities cannot be maintained in the laboratory and need to be ordered as necessary. As additional steps continue to be added to the state procurement process it only exacerbate the delays in obtaining the necessary supplies. Any delays in the procurement approval process for supplies and equipment can have an immediate impact on the laboratory operations, causing laboratories to run out of critical supplies, stopping analysis and causing an increase in backlogs or even missed court dates. The ISP has also experienced delays in the procurement of services which are utilized to enhance or expand ISP's laboratory capabilities, including those pertaining to DNA (e.g., contracting with vendors to perform validations of new technologies, or train scientists in new techniques). These delays have a direct impact on the ISP's ability to quickly obtain and implement new technology and efficiency measures.

As a result of delays in payment to vendors, including those associated with the two-year state budget impasse, a number of vendors are no longer willing to conduct business with the state. This barrier creates difficulties in obtaining needed services or supplies in a cost-effective manner, if at all. Often, the ISP is forced to locate a different vendor who charges a higher cost, or who can only fulfill a portion of the need. Other vendors frequently "cut off" the ISP laboratories' ability to submit new orders until such time as past invoices are paid, creating a choke point which has delayed receipt of critical supplies.

In spite of the challenges presented by these barriers and choke points, the ISP is committed to reducing the backlog and continues to pursue avenues to accomplish this while maintaining the highest quality standards of casework. In the Biology section, these avenues include streamlining internal analytical procedures and operational processes, modifying the training program, incorporating higher-volume robotics in the analytical process, and conducting a Lean Six Sigma evaluation to identify opportunities for further improvement. For more information regarding the ISP's Biology section and its associated funding and staffing needs, see the 2019 DNA Testing and Accountability Report which can be found on the ISP home page ([www.isp.state.il.us](http://www.isp.state.il.us))

### **The ISP's Implementation of Rapid DNA**

Despite the FBI's current limitations regarding the use of Rapid DNA systems, the ISP has already taken action and has begun the necessary steps to implement Rapid DNA technology in its laboratory system. A Rapid DNA Committee of ISP forensic scientists and managers was created and assigned to evaluate options to implement Rapid DNA technology in the most effective and efficient manner within the laboratory system, given the FBI's restrictions. The committee traveled to and/or met with other state

forensic laboratories that are also exploring the implementation of Rapid DNA technology within their state, and have attended demonstrations by vendors and other entities. Based on all information obtained, the ISP has determined it will initially implement Rapid DNA in the analysis of certain known reference samples. It is anticipated this approach will reduce the current analysis time for such samples, and enable eligible profiles to be uploaded to CODIS in a timelier manner. The ISP is currently completing the process of procuring the only FBI-approved Rapid DNA system for use by an accredited forensic laboratory that will enable profiles to be uploaded directly to CODIS. Next steps include performing the required validation studies, training, and procedure development in order to implement Rapid DNA in the laboratory. The ISP's target completion date for the validation studies and other associated activities is October 31, 2019, with an anticipated implementation date of November 22, 2019 for the use of Rapid DNA on known reference samples in cases. Additionally, the ISP will continue to monitor the FBI's progress in developing/approving this technology for use on crime scene samples, and will evaluate the expansion of Rapid DNA technology for those types of samples at that time.

### **Rapid DNA in Booking Stations**

The FBI Laboratory Division has been working with the FBI Criminal Justice Information Services (CIJS) and the CIJS Advisory Policy Board to plan the effective integration of Rapid DNA into booking stations. Reference samples collected from individuals at booking stations will directly upload to CODIS; the intent is to quickly search the individuals' profile in CODIS while in custody. The search may indicate a potential DNA match with a DNA profile from an unsolved case and provide a potential investigatory lead. To accomplish this, the FBI had to develop the necessary interface for booking stations to communicate with CODIS. It is the FBI's intention to initiate pilot testing of this application with federal, state, and local law enforcement. The FBI established the following prerequisites for federal, state and local booking agencies in order to participate in Rapid DNA: the state must have implemented an arrestee DNA legislation that authorizes the collection and analysis of DNA at the time of arrest; Live Scan integration during the booking process for obtaining State Identification Numbers (SID) from the State Identification Bureau in near real time; and connectivity with the State Identification Bureau (SIB)/CIJS Systems Agency (CSA). The FBI recently announced it will implement the pilot for the use of Rapid DNA systems in booking stations by the end of 2019 in five arrestee-authorized states they have selected; however, it should be noted at this time there is **not** a Rapid DNA system currently approved for use by law enforcement booking agencies.

### **Recommended Improvements to Illinois' DNA Submission Laws**

A broader application of Rapid DNA technology that could have a significant positive impact on solving criminal cases within the state of Illinois would be if Illinois were to become a state that allows for the collection and analysis of DNA samples taken upon arrest at booking stations. Some states have enacted laws that allow for the collection and analysis of all arrestees, which would maximize the use of Rapid DNA, while other states have limited the collection to only felony arrests or certain felony offense types. Were Illinois to pass a law authorizing some level of collection and DNA analysis at arrest, its law enforcement agencies could use Rapid DNA systems in their booking stations, assuming the FBI's booking station pilot is completed and approved for use by all eligible agencies.

While legislation mandating the collection of DNA samples from arrestees and their subsequent upload into CODIS can be pursued at any time, the impact and effectiveness would differ depending on whether the law becomes effective before or after the FBI's completion of the booking station pilot and the

anticipated publication of the resulting requirements. Were an arrestee law to become effective *prior* to the ability to use Rapid DNA in booking stations, all collected arrestee samples would have to follow current protocols and be submitted to the ISP for analysis and upload into CODIS. Currently, the ISP has staffing and resources to handle the approximately 21,000 samples submitted per year, but with an estimated annual average of 90,000 arrestee samples resulting from a law encompassing all felony arrestees, the ISP could not absorb that additional volume without sufficient staffing and resources in order to analyze and upload those samples in a timely manner. Based on previous calculations, the estimated cost for ISP to receive, analyze, and upload all arrestee samples is \$19 million the first year (includes personal services and fringe benefits, contractual modifications to sample tracking systems, facility expansion/renovations and commodities). The outyear cost would be dependent on the specific requirements of any arrestee legislation, but is estimated to be about \$4 million per year after initial implementation. Without additional resources, a backlog of samples would grow, leading to long turnaround times that would delay upload into CODIS and the ability to provide critical investigative leads. This would significantly delay the main benefit of such an arrestee law, which would be the potential to solve crimes that might have otherwise gone unsolved if the arrestee's sample had not been collected.

However, if arrestee legislation is implemented *after* Rapid DNA can be used in booking stations, the majority of the DNA analysis and upload to CODIS would occur within the arresting agency's facility, directly from the Rapid DNA instrument. The ISP scientists would not be required for this portion of the process and samples uploaded directly from agencies would not become part of a backlog of arrestee samples requiring ISP to upload to CODIS. Instead, the arrestee's sample would be immediately uploaded into CODIS from the Rapid DNA instrument at the booking station, compared to unknown DNA profiles in the CODIS database, and if it matches, it would quickly result in information that could provide a critical investigative lead in an unsolved case – possibly even while the arrested individual is still in custody. The ISP would continue to accept and analyze arrestee samples collected and submitted by agencies without a Rapid DNA instrument, but ISP's involvement would lessen as more agencies obtain the Rapid DNA technology.

### **Considerations for Statewide Implementation in Booking Stations**

Statewide implementation of Rapid DNA in booking stations will require careful consideration and appropriate application of the FBI's anticipated published requirements for booking stations. Given the nature of DNA samples and the sensitivity regarding confidentiality and other concerns associated with DNA, the ISP anticipates the FBI's requirements will set stringent standards for the use of Rapid DNA in booking stations. At this time, it is unknown what involvement and responsibilities would be required of the ISP and its State CODIS Administrator in the booking station program. It is critical that a well-developed, state-wide plan be established, with input from all appropriate stakeholders, prior to Illinois' implementation of Rapid DNA in booking stations. **Therefore, ISP recommends that a Law Enforcement Rapid DNA Task Force be assembled immediately after the FBI publishes the requirements.** The task force would be comprised of law enforcement agency representatives and others, depending on the FBI requirements. The task force would be responsible for developing appropriate rules and protocols for consistency among participating agencies, identifying funding opportunities for Rapid DNA system purchases by agencies, drafting any recommended legislative language to facilitate booking station participation, and identifying any other actions needed to execute an effective implementation plan across the state.