



FY 2020 DNA Testing Accountability Report



in accordance with 730 ILCS 5/5-4-3a





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OVERVIEW

By statute, the Illinois State Police (ISP), through its Division of Forensic Services (DFS) Forensic Sciences Command (FSC), provides forensic science analytical services to more than 1,200 state, county, and local criminal justice agencies. The ISP forensic science laboratory system, established in 1942, has long been recognized as one of the largest crime laboratory systems in the world. The ISP system, currently comprised of six operational (caseworking) laboratories and a Training and Applications laboratory, analyzes evidence from criminal cases in the following specialty areas: drug chemistry, trace chemistry, toxicology, biology, latent prints, firearms/toolmarks, and footwear/tiretracks. Each operational laboratory serves a specific geographical region of the state, providing forensic science analysis of evidence collected from crimes in that region. Whenever possible, the ISP laboratories assist each other in analyzing cases from other regions in an effort to provide more timely service to all Illinois agencies.

As outlined in last year's report, the most significant, and time intensive, initiative was the completion of the development and the statewide implementation of a new Laboratory Information Management System (LIMS). After years of design, development, and testing, the ISP went live with the system on December 3, 2018. Over the course of FY20, the ISP continued to make modifications and improvements to the LIMS to ensure it continues to meet the needs of the Forensic Sciences Command and the criminal justice system. Implementation resulted in a wide variety of changes to most lab operations, including evidence receiving/returning, evidence tracking, documentation of case analysis, and reporting of results. Another significant change was made in the way the ISP now defines backlog. It is defined as any unfinished assignment (i.e., work requested on a case) in a section, regardless when it was submitted. In previous years, backlog was defined as unfinished cases (in-progress or unstarted) in the section *for more than 30 days*. In addition, the LIMS has enabled the ISP to better track all the work that has been requested by agencies and State's Attorney's Offices, resulting in additional types of assignments now being included in backlog figures. As analysts grew more familiar with the new LIMS system and issues were resolved, the productivity in all sections of the laboratory system quickly improved. In FY20, the ISP laboratory system received a total of 63,883 assignments and completed analysis on 64,543 assignments. As of the end of FY20, the total forensic assignments on the backlog was 14,671; this includes assignments in all sections in all laboratories.

Another change documented in last year's report which is worth noting is, effective in early 2019, the ISP began reporting Forensic Biology and DNA activities as one combined section called "Biology." This takes into account that the same personnel conduct both forensic biology (screening) and DNA analysis. In addition, a single case may include multiple assignments within the section depending on the analysis requested by the submitting law enforcement agency. This will result in a more accurate representation of submissions, backlog, and completed analysis within this section.

The ISP continues to maintain its long-standing commitment to providing high quality services to the Illinois criminal justice system. To that end, the ISP forensic laboratory system adheres to an extensive Quality Assurance (QA) program. The emphasis of the QA program is on prevention and/or correction of analytical problems and providing a course of action if the quality of the work/result is questioned. A key component of the QA program is accreditation. The ISP laboratory system was the first in the world to become accredited through the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) in 1982. Since then, the laboratories have continuously maintained accreditation under the strictest criteria. In 2015, ISP laboratories successfully underwent a reaccreditation assessment and, in doing so, maintained accreditation status under the International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) criteria. This ISO accreditation was originally granted in 2005 by Forensic Quality Services – International (FQS-I) under ISO/IEC 17025:2005 and FQS-I Forensic Requirements for Accreditation. ISO accreditation has been maintained since that time, currently through the American National Standards Institute-American Society of Quality (ANSI-ASQ) National Accreditation Board (ANAB), with periodic on-site assessments to ensure continued compliance. All of the 378 employees assigned to the Forensic Sciences Command – including Forensic Scientists, Evidence Technicians, forensic science managers, and support staff – adhere to the ISO accreditation criteria and standards to ensure the work provided by the ISP laboratories is of the highest quality.

THE BIOLOGY PROGRAM – MEETING THE NEEDS OF AGENCIES

The ISP Biology Program consists of two components: **casework** and **offender database**.

The **casework** component involves the forensic analysis of evidence from crime scene cases submitted to the ISP laboratories by any Illinois law enforcement agency. In order to continue to positively impact backlogs and improve turnaround times in the Biology section, the ISP is continuously evaluating and implementing new efficiency measures. In 2018, ISP implemented the efficiency measure called the "Direct to DNA" approach, which eliminates the screening of biological material on certain types of evidence. Additionally, in mid to late FY20, the ISP implemented another new efficiency utilizing advanced robotics in the three largest laboratories. The implementation of the new robotics initially slowed the productivity of the scientists as they worked through the transition to the new equipment, workflows, and challenges that arose with the implementation and familiarization with the new procedures. This impact was expected, however, and overall productivity has begun to quickly improve as workflows are finalized and the use of the robotics becomes second nature to the scientists. Both efficiency measures are anticipated to reduce delays in case analysis and the overall turnaround time of the case. However, in certain situations, screening items will still be necessary in order to identify suitable and probative (i.e., can potentially help solve the case) biological material. For example, screening a bloody bedsheet from a murder victim's home for biological material left by the suspect may be important investigative information, while finding the victim's blood on the victim's

clothing may not provide any probative information. Once sufficient biological material is found through the screening process, or because of the Direct to DNA process, the evidence undergoes DNA analysis. The DNA profile developed from the evidence is then compared to known standards from a victim and/or suspect to determine the source of the profile. If a suspect is not known, the evidence DNA profile may be entered into, and searched against, the state and national DNA database known as the Combined DNA Index System (CODIS).

In the **offender database** component of the ISP Biology Program, all convicted felons in Illinois, as well as some other individuals as allowed by law, are required to submit a biological sample for DNA typing and inclusion in CODIS. In CODIS, when an unknown DNA profile developed from evidence matches a known offender's DNA profile, or when an unknown DNA profile from one crime matches an unknown DNA profile from another crime, the match is referred to as a "hit." A CODIS hit gives police the ability to identify possible suspects to a crime or link crime scenes, thus providing crucial investigative information to help solve the crime.

To ensure the needs of all aspects of the criminal justice system are met, each ISP laboratory works with law enforcement and criminal justice entities to prioritize assignments based on investigative and court needs. When a law enforcement agency submits case evidence to the laboratory for analysis, ISP tracks the "assignment" or work requested on the case. A single case may consist of multiple assignments, either within a section or among multiple sections in the laboratory. This is a more accurate way to track the work requested by law enforcement agencies. Upon submission of evidence, the submitting agency communicates their priority to the laboratory, including a specific date when results are needed, if applicable. When the laboratory is prioritizing assignments, factors which would warrant a higher priority include assignments which have an established court date, a subpoena, or court order associated with the forensic analysis; rush assignments to meet an urgent investigative need, such as in the instance of a suspected serial murderer; and violent (versus property) crime assignments. The ISP laboratory considers the submitting agency's requested priority for a particular assignment in conjunction with the priority of assignments already submitted by other agencies to determine the order in which assignments will be processed. For example, one agency may submit an assignment stating results are needed for court in two weeks. That same day, another agency may submit a "rush" assignment stating results are needed within 48 hours before the murder suspect is released from custody. A third agency submits a routine burglary assignment later that day. The priority order for those three assignments would be: first, the "rush" assignment needing results in 48 hours; second, the assignment needing results for court in two weeks; and third, the routine burglary assignment. This process is used to ensure court dates are met and rush assignments are completed to meet the needs of the user agencies.

These priorities are constantly reviewed by laboratory management and may need to be adjusted upon submission of additional priority assignments. If necessary, ISP laboratories transfer evidence to other ISP laboratories as an internal approach to meet the priority needs of the criminal justice system.

BIOLOGY ASSIGNMENTS

As previously stated, the ISP now counts assignments in the Biology section (forensic biology and DNA together). The number of Biology assignments received in the ISP laboratories represents only 22 percent of the total number of assignments received annually for all forensic disciplines within the ISP forensic laboratory system. The following table compares FY19 and FY20 Biology submission figures.

Biology Submissions*

	FY19	FY20	% Difference from FY19	% of Total FY20 Assignments
Combined	13,176	14,343	9%	22%

*Submission figures are based on initial submissions and do not reflect subsequent activity such as agency case cancellations or other activities.

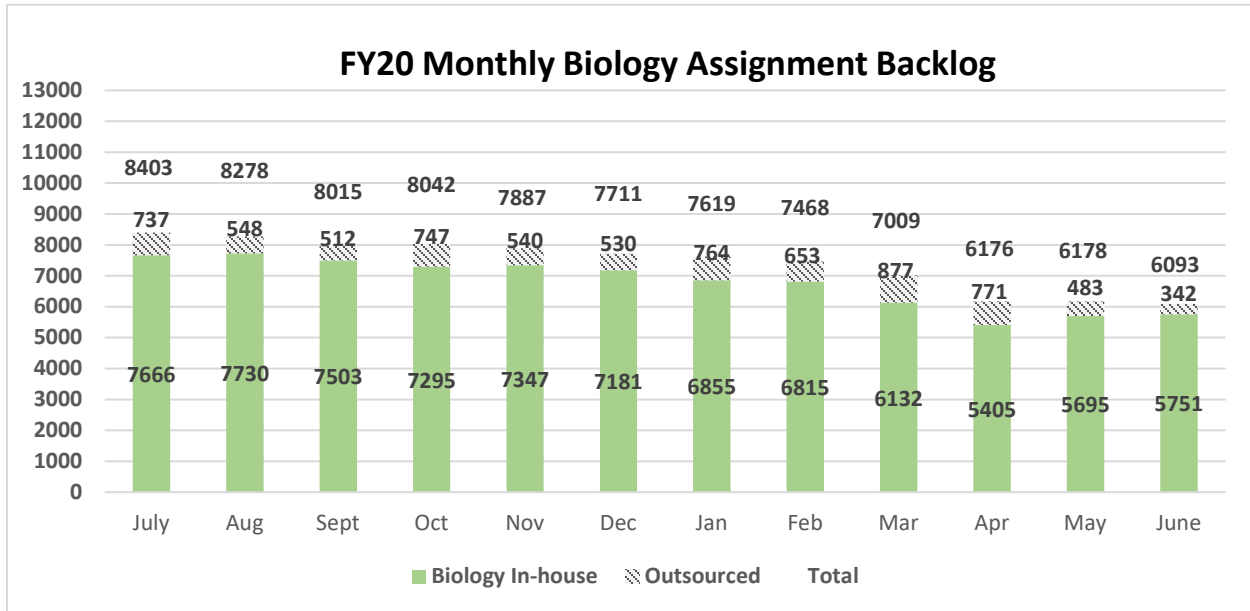
In accordance with 730 ILCS 5/5-4-3a, the ISP is required to include in the reported backlog the number of cases still in the custody of law enforcement agencies which had not yet been submitted to an ISP laboratory (if notified by these agencies in writing by June 1 of each year). During FY20, the ISP had not received notification from any agency under this particular statute. Beginning in January 2016, pursuant to 730 ILCS 5/5-4-3a, the ISP is required to report backlog statistics quarterly, which can be found at <http://www.isp.state.il.us>.

BIOLOGY ASSIGNMENT BACKLOG

Through ongoing evaluation and implementation of various technology and efficiency measures, the Biology section continues to seek ways to enhance services while reducing backlogs and improving turnaround times of Biology assignments completed in-house. However, it must be noted that laboratories do not control the number of cases being investigated and subsequently submitted for analysis by agencies. While an agency may submit one case to the laboratory, it may result in several assignments within the laboratory. When the number of assignments received exceeds the capacity of the laboratory staff to conduct the analysis, a “backlog” occurs. Effective January 1, 2019, the ISP now defines backlog as any unfinished assignment (i.e., work requested on a case) in a section, regardless of when it was submitted. In previous years, backlog was defined as any unfinished case (in-progress or unstarted) in the section for more than 30 days. This backlog includes all assignments that are currently in-process of analysis and those, which are not yet started. The time needed to complete analysis on an assignment can vary due to any number of factors including the complexity of the case, the number of exhibits in the assignment, or the number of additional items of evidence submitted over a period of weeks or months of an ongoing investigation.

The monthly Biology backlog for FY20 is shown in the following chart. The ISP has been outsourcing some Biology assignments for several years as part of its efforts to reduce backlogs. The ISP shipped a total of 1,813 assignments from case types such as sexual assault and homicide to the outsourcing vendor during FY20. At the end of FY20, the Biology backlog was 6,093 assignments; of these, 342 assignments were outsourced assignments currently in-progress at the outsourcing vendor laboratory or back at ISP pending final laboratory review.

The FY20 Biology backlog was 31 percent lower than the FY19 figure (8,776 cases); this decrease is largely the result of increased productivity as scientists became more familiar with working assignments in the new LIMS system, as well as new efficiencies implemented during FY20. Also, the LIMS has enabled the ISP to better track all the work that has been requested by agencies and State’s Attorney’s Offices, resulting in additional types of assignments now being included in backlog figures than had been previously.



As noted in the table below, during FY20, the ISP analyzed 15,888 Biology assignments within the laboratory system. This is a 47 percent increase from the FY19 figure (10,801 cases). The ISP is committed to reducing the backlog and continues to pursue various avenues to accomplish this while still maintaining the highest quality standards of casework. These avenues include streamlining the internal analytical screening process by exploring the implementation of the “Direct to DNA” approach for additional types of evidence. In addition, as resources allow in FY21, the ISP will continue to outsource Biology assignments as a major effort in reducing the overall Biology backlog. However, any outsourcing program requires significant non-analytical time on the part of forensic scientists to perform various tasks associated with the effort. Such tasks include receiving, triaging, and preparing evidence for shipment; performing quality assurance checks of the vendor’s analysis; technically reviewing the analytical data received from the vendor; and uploading appropriate DNA profiles into CODIS. Once all outsourcing initiatives are completed, the scientists assigned to perform those duties can be redirected to assist in reducing the in-house case backlog. Additionally, the ISP is in the process of implementing other initiatives such as, probabilistic genotyping, purchasing of additional automated instruments, and streamlining additional procedures as further ways to reduce the backlog and improve the turnaround time of the analysis of evidence.

Backlog and Outsourcing Analysis

NOTE: Comparisons between past case figures and current assignment figures are difficult because a single case may consist of multiple assignments. LIMS has enabled the ISP to better track all the work that has been requested, resulting in additional types of assignments now being included in backlog figures, which had not been previously included. Backlog is defined as all in-progress or unstarted assignments in the section regardless of when they were submitted.

	Biology	
	FY19	FY20
Total pending assignments as of June of the previous fiscal year	7,591	8,776
Assignments submitted to the labs	13,176	14,343
Assignments worked (in-house and outsourced)	(10,801)	(15,888)
Assignments outsourced with grant funding*	0	1,715
Assignments outsourced with state funding*	1,670	98
Total number of backlog assignments at ISP (in-house)	7,660	5,751
Total number of backlog assignments at vendor laboratory (outsourced but not yet completed)	1,116	342
TOTAL BACKLOG* Assignments (in-house and outsourced)	8,776	6,093

* Table reflects outsourced cases completed during the specified fiscal year as reflected in LIMS.

Funding

NOTE: With one exception, funding figures included in this section of the report are estimates from February 2020 budget projections since FY20 accounting records were not yet closed as of the date of this report.

During FY20, the ISP expended a total of \$19.3 million in state funds on the Biology program, including both casework and offender samples. This figure is a 4.0 percent decrease from the \$20.1 million expended in FY19. Included in this FY20 total is \$3.0 million from the State Offender DNA Identification System Fund. This figure is 3.4 percent higher than the \$2.9 million spent from that fund in FY19. Also included in the FY20 total is \$474 thousand from the State Crime Laboratory Fund.

As it has been for many years, the ISP continues to aggressively pursue federal grant dollars to supplement state funding to aid in addressing the Biology backlog and to build in-house capacity. In FY20, this practice helped the ISP address the Biology backlog through outsourcing, the use of overtime, and the purchase of additional commodities and equipment. In this way, the ISP was able to ensure more cases were analyzed than could have been worked using state funds alone. In FY20, the ISP spent \$2.6 million in federal grant funds, which is a 116 percent increase from FY19 (\$1.2 million). The table below lists estimated FY20 grant expenditures. Additional grant funding is currently being pursued.

FY19 Biology Grant Expenditures

Grant	Funds Expended
NIJ 2017 DNA Capacity and Backlog Reduction Program	\$716,401
NIJ 2018 DNA Capacity and Backlog Reduction Program	\$1,528,559
NIJ 2019 DNA Capacity and Backlog Reduction Program	\$1,050,700

Commodity and equipment costs for DNA analysis are very high. If significant cuts to the state budget are mandated or the ability to spend federal grant money is curbed, there will be insufficient funds to purchase necessary supplies, resulting in unworked assignments and an increase in the backlog. In FY19 and some previous fiscal years, several vendors threatened to stop providing services and goods to the ISP due to non-payment or lengthy delays in receiving their payments from the Comptroller. In FY20, this situation had vastly improved.

As in past fiscal years, one hindrance to the timely purchase of forensic equipment and commodities continues to be the lengthy and complex state procurement process. As additional steps continue to be added to the procurement process, this exacerbates the delays in obtaining necessary supplies and equipment. The expensive DNA commodities have a short shelf life before expiration; therefore, large quantities cannot be maintained in the laboratories but need to be ordered as necessary. Any delays in the procurement approval process can have an immediate impact on laboratory operations, causing laboratories to run out of critical supplies, stopping analysis, and causing an increase in the backlog or even missed court dates. Additionally, the ISP has experienced delays in the procurement of equipment and services (e.g., contracting with a vendor to perform validations or to train scientists in new techniques), which have a direct impact on the ISP's ability to quickly obtain and implement new technology and efficiency measures.

Personnel

As of June 30, 2020, the ISP employed a total of 61 fully trained forensic scientists working on Biology assignments or performing analytical-related activities. This figure is down from the FY19 staffing levels of 63. The current staffing level is insufficient to address the current number of assignments submitted by law enforcement agencies. Based on the number of submissions and current technology, the ISP has determined a staffing level of 90 scientists in the Biology section is needed, supported by evidence technicians, technical DNA managers, clerical, and maintenance personnel, to not only address additional submissions, but to also reduce the backlog in the Biology section. In FY19, the ISP was approved to hire five additional Biology Forensic Scientist Trainees. These five trainees began training in December 2018; however, two have since resigned. The three remaining trainees are due to be released from training in late summer of 2020. In late FY19, the ISP was approved to hire 10 additional Biology trainees. However, two individuals declined the position and due to the timing of their decline, only eight trainees were hired. They began training in March 2020 and are anticipated to be release from training in early 2022. In order to meet staffing needs and address normal attrition of Biology scientists, the ISP has hired a second Biology Training Coordinator to increase training capacity

and established a hiring plan that will add additional Biology scientists each year for the foreseeable future.

The ISP's Forensic Scientists in the Biology section are well qualified and highly-trained, but the process of hiring and training them takes significant time; thus, the impact of any new hires is not immediate. The ISP cannot fill forensic science vacancies as they occur; and once approval is given, the hiring process generally takes six to nine months. Full training of a Forensic Scientist in both screening of biological fluids and DNA techniques currently takes approximately 19-24 months. The ISP is exploring ways to help further reduce that training timeline yet maintain the quality of the training.

Any progress the ISP makes in reducing backlogs can be immediately impacted when any Forensic Scientist vacancy occurs. More significantly, without timely filling of non-scientific laboratory support and forensic supervisory positions, fully-trained Forensic Scientists have to perform critical evidence technician, managerial, and clerical duties rather than analyze cases. This specific situation resulted in Recommendation #5 in the Office of the Auditor General (OAG) report released in March 2009. Specifically, the OAG stated on page 38, **“Failure to maintain the necessary staffing levels results in cases remaining unsolved and serial criminals could remain free to commit additional crimes. The ISP’s inability to fill lost forensic positions has resulted in staff performing work outside of their official duties, which increases the backlog of forensic cases submitted to the labs.”**

As noted in previous reports, this situation continues to occur in the Biology section, as well as in all the different forensic disciplines in the ISP laboratory system. A review of staffing levels from 2009 through 2019 shows through normal attrition, the ISP loses an average of 13 (5.9 percent of total) experienced Forensic Scientists each year. Managerial and support staff attrition, has averaged 13 individuals lost (approximately 8.3 percent of such positions) annually. In recent past years, the managerial/support vacancies had not been approved for filling as readily as the scientist vacancies, so Forensic Scientists had to be reassigned to perform the critical duties of these vacant managerial/support positions. As a result, fewer cases were analyzed, contributing to higher backlogs. This demonstrates how the inability to immediately fill any vacant forensic position - including managers and support staff - has a negative effect on backlog reduction efforts. Generally speaking, high backlogs equate to an increased risk to public safety as criminals remain unidentified and able to commit additional crimes, and innocent individuals remain incarcerated as they await forensic results, which could clear them. Fortunately, throughout FY20, the ISP was able to move forward in a timelier manner with filling a number of vacant forensic manager, evidence technician, and other support positions. The ISP will continue to pursue filling newly vacated positions, as approvals are received, to enable Forensics Scientists to focus on case analysis. Additional management, clerical, evidence technician, and other support positions are included in the ISP staffing plan for the next several years.

OFFENDER DATABASE SAMPLE BACKLOG

The CODIS is a DNA database program administered by the FBI and implemented by the ISP at the state level. The offender portion of this system contains DNA profiles of individuals convicted of felonies, as well as a few other eligible offenses in accordance with Illinois statutes. All samples collected from eligible offenders from across the state are submitted to the DNA Indexing Unit of the Springfield Forensic Science Laboratory. That unit is responsible for analyzing and uploading to the CODIS database all such submitted DNA samples for the entire state.

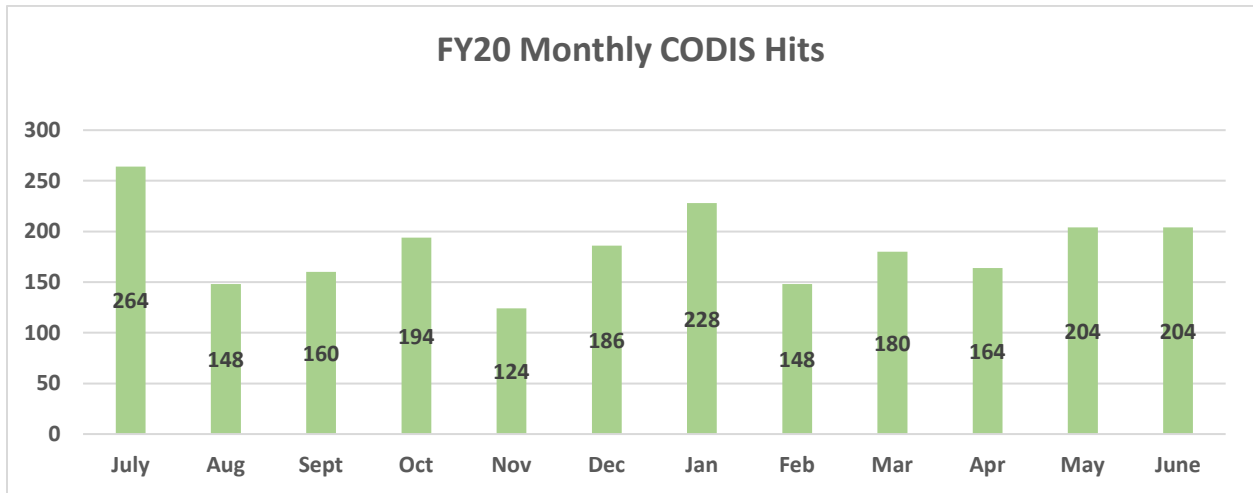
During FY20, the ISP received 15,570 new offender samples and submitted 16,217 samples to CODIS by the end of June 2020. Additional samples were either in-process of analysis/backlogged or were not uploaded for various reasons (e.g., were duplicates, were ineligible, etc.).

With the implementation of the new LIMS in December 2018, the ISP now defines backlog as an unfinished offender sample (in-progress or unstarted) at the Indexing Unit. In previous years, backlog was defined for the Indexing Unit as the samples that were not uploaded to CODIS within 30 days of when they were eligible for CODIS upload. Based on the past definition of backlog, for the past decade, the ISP had been able to maintain a zero backlog in offender samples, until January 2017. In January 2017, the ISP, as well as all other laboratories that participate in CODIS, were mandated by the Federal Bureau of Investigation to change DNA chemistries; this change increased the number of CODIS core loci from 13 to 20. This change in DNA chemistry has led to an increase in the time required to analyze offender samples. Additionally, in FY17, vendors struggled to provide goods to the ISP due to non-payment or lengthy delays in receiving their payments from the Comptroller. The change in DNA chemistry coupled with the delays in receiving goods caused a backlog in offender samples. During FY20, the Indexing unit was able to continue to decrease the time required to analyze samples and reduce the backlog. Based on the way backlog is currently defined and the continuous influx of offender samples, it is unrealistic for the section to have a zero backlog; however, the section will continue to explore ways to decrease the time required to analyze samples and reduce the backlog. At the end of FY20, the CODIS sample backlog was 155.

On January 1, 2012, PA 97-383 became effective. This law closed several loopholes in previous legislation by requiring a DNA sample from all registered sex offenders, regardless of conviction date. The law also added three reasons for collection of DNA: a court order with no other restrictions, sex offenders from other states that are not required to be supervised by parole or probation, and limited "indictees" for First Degree Murder, Home Invasion, Predatory Criminal Sexual Assault, Aggravated Criminal Sexual Assault, and Criminal Sexual Assault. Since the passing of this law, no other changes to the offender statutes have passed that impact the number of offender samples being submitted to the DNA Indexing Unit.

In FY19, the DNA Indexing unit was able to fill the vacant support staff position, which was vacated due to normal attrition. The funding for the CODIS program is sufficient to address current needs. However, in the event of an inability to backfill vacancies, significant budgetary cuts, equipment problems, and/or additional immediate changes to offender statutes (such as a law which would require all felony arrestees to submit a DNA sample for CODIS), this could change. Any one such action will result in the development or exacerbation of a backlog, which will require additional time and resources to address.

In FY20, there were 2,204 CODIS hits, compared to the 1,884 CODIS hits in FY19. The following chart gives a monthly account of CODIS hits during FY20. This figure has increased over past years due to additional unknown DNA case profiles being uploaded into CODIS as a result of the outsourcing effort and the increase in the number of DNA cases being analyzed. The significance of any of the CODIS hits, however, is not known and cannot be determined by the ISP; it is only determined by the law enforcement agency after additional investigation is conducted.



On June 30, 2020, there were totals of 640,403 offender profiles and 52,617 crime scene (or “forensic unknown”) profiles in the Illinois DNA database. There were also cumulative totals of 26,938 CODIS hits, with 23,221 offender-to-case hits, and 3,818 case-to-case hits detected. In an offender-to-case hit, a convicted offender’s known DNA profile is associated with an unknown DNA profile from a case. This information can provide investigators with the identity of the possible perpetrator. In a case-to-case hit, unknown DNA profiles from two or more cases are associated, thereby linking cases and providing additional leads for investigators to pursue. There have been 4,024 national associations, which are CODIS hits of DNA profiles from Illinois to DNA profiles from other states. All 50 states, plus the FBI and US Army laboratories, participate in CODIS. Through April 2020 (last data available), Illinois ranks sixth in the nation, behind only California, Florida, Texas, Ohio, and New York in the number of investigations aided by CODIS (26,378), according to FBI statistics.

NOTE REGARDING STATISTICS PROVIDED IN THIS REPORT:

- All reasonable efforts have been made to ensure the accuracy of the data in this report within the limitations of the current Laboratory Information Management System (LIMS).
- With both Biology casework, as well as with offender database samples, the reported backlog is just a snapshot of the workload at a given point in time. Legislation, crime rates, new technology, and available resources all impact this statistic.



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