



# Focus on Forensics

APRIL 2021

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## SPECIAL POINTS OF INTEREST:

- Learn about **Rapid DNA** and how it is being applied to KY cases
- Familial searching used in KY, what is it and what is it not?
- Beating the Backlog— an update on the status of sexual assault kit processing at the lab

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## Re-Introducing the KSP Newsletter

Jeremy Triplett, Central Lab Manager

Greetings from the Kentucky State Police Forensic Laboratories and welcome to our revamped laboratory newsletter! The purpose of our newsletter is to provide timely information about the KSP Laboratory System to our criminal justice stakeholders. Through this regular publication, we hope to keep you steadily informed of relevant updates and best practices for submitting evidence to our labs or understanding the results of our testing.

I'd like to start with a huge thank you to Danielle Jensen with the Central Lab DNA Database section for coordinating this publication and devoting a significant amount of effort to reinvigorating this important communication tool. Thank you, Danielle!

Since the last newsletter was published, there have been no small number of changes at the laboratories, the first of which was a structural reorganization. If you're concerned that Laura Sudkamp is not writing this introduction, you need not fear! Laura has been promoted to Division Director of the laboratory system. She is still at the helm, skillfully captaining the ship and overseeing all six laboratories. As of April 2020, I have been given the unenviable task of filling Laura's former shoes as director of the Central Laboratory. If you have questions or concerns related to the Central Laboratory, please feel free to reach out to me. If you have items related to the entire laboratory system, Laura is still your best contact. Another change is the incorporation of the Friction Ridge (latent fingerprints) section into the Forensic Laboratory division. The friction ridge section is still in the same location; however, they are now organized under the Central Laboratory and over the course of the next year will be incorporated into the laboratory quality system and international accreditation. We are extremely excited to welcome our friction ridge colleagues to the forensic laboratories team!

It goes without saying that 2020 was a challenging year for many organizations, and the KSP labs were no different. Since April 2020, we have been operating at 50% on-site capacity with staff working in rotating shifts, alternating between in-person and telework. Training opportunities have been significantly reduced and most meetings have been conducted virtually. Obviously, this is a difficult way to operate in a laboratory setting. Despite those challenges, laboratory backlogs have remained relatively steady and, in some cases, even improved. In addition, the laboratory system successfully underwent our 4-year reassessment by the ANSI National Accreditation Board and was reaccredited to international standard ISO 17025 last Fall. In sort of a blessing-in-disguise, COVID allowed us to evaluate our evidence intake process and our evidence team has developed a helpful evidence appointment process that has proven so effective that we will keep it even as COVID restrictions subside. We are hopeful that on-site personnel restrictions will soon ease, and we will be back to 100% on-site capacity in the coming months.

As we dig into 2021 and look toward the future, the laboratory continues to pursue our mission: to provide reliable forensic scientific services to the Kentucky criminal justice system. We continue to focus on reducing backlogs and turnaround times through efforts like the current examination of a "Direct to DNA" testing workflow and the use of Rapid DNA.

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## Understanding Kentucky's Forensic Laboratory System

The Kentucky State Police forensic laboratory system is comprised of six laboratories located throughout the state. Each laboratory offers certain forensic services, and law enforcement can submit cases to their nearest location offering their required services. The KSP forensic labs support criminal justice in Kentucky by providing analyses in more than 40,000 cases annually for more than 500 law enforcement agencies. For more details on how the KSP Laboratory developed and grew into the system it is today, check out the April 2015 newsletter issue - History of the Lab Part 2.

### Central Lab

The central laboratory is located in Frankfort, KY, and provides the following forensic services: blood alcohol, toxicology, breath alcohol maintenance, seized drugs, trace/GSR/arson, firearms/toolmark/imprint evidence, DNA casework, DNA database, photography, and polygraph. The central laboratory is the largest in the Kentucky lab system. The staff consists of a Lt. Colonel, division director, laboratory director, quality supervisor, nine administrative specialists, nine breath alcohol technicians, twenty-eight chemists (six trained in drugs, sixteen trained in drug/alcohol toxicology, and six trained in trace), three firearms/toolmark analysts, three evidence technicians, forty biologists (six in database, ten in property crimes, eight in serology, eleven in violent crimes, and five new trainees), two photography staff, and three polygraph examiners.

### Eastern Lab

The eastern laboratory is located in Ashland, KY, and provides the following forensic services: blood alcohol, breath alcohol maintenance, seized drugs, and firearms/toolmark/imprint evidence. The staff consists of a director, an administrative specialist, five chemists, and two firearms/toolmark analysts.

### Jefferson Lab

The Jefferson laboratory is located in Louisville, KY, and provides the following forensic services: blood alcohol, seized drugs, biology casework screening, and firearms/toolmark/imprint evidence. The staff consists of a director, an administrative specialist, three biologists, eight chemists, an evidence technician, and a firearms/toolmark analyst.

### Northern Lab

The northern laboratory is located in Cold Springs, KY, and provides the following forensic services: blood alcohol, breath alcohol maintenance, seized drugs, and biology casework screening. The staff consists of a director, an administrative specialist, three biologists, six chemists, and an evidence technician.

### Southeastern Lab

The southeast laboratory is located in London, KY, and provides the following forensic services: blood alcohol, breath alcohol maintenance, and seized drugs. The staff consists of a sergeant, a director, one administrative specialist, and six chemists.

### Western Lab

The western laboratory is located in Madisonville, KY, and provides the following forensic services: blood alcohol, breath alcohol maintenance, seized drugs, and biology casework screening. The staff consists of a lieutenant, a director, two administrative specialists, two biologists, and six chemists.

### Latent Prints (AFIS)

As of December 2019, latent prints officially became integrated with the forensic laboratory system, though they are still located in a separate building in Frankfort, KY. The staff consists of an administrative specialist and seven latent print analysts.

For more information on the laboratory system or to access laboratory manuals, you can visit:

<http://kentuckystatepolice.org/forensic-laboratory-system/>

## Re-Introducing the KSP Newsletter *continued from page 1*

We are constantly evaluating reliable technology improvements like familial DNA searching, which expands our capabilities to identify human remains, or the RECOVER system, which dramatically enhances our capability to recover latent fingerprints on cartridge casings.

We are also in the embarking on a series of significant upgrades to our informational systems, particularly the B.E.A.S.T. LIMS system and our Qualtrax document management system. The BEAST upgrades will provide a big improvement to the laboratory processes and our reporting abilities, and the Qualtrax initiative will allow us to reach our goal of providing online, transparent access to our laboratory policies and procedures. Lastly, we are in the final stages of revising the KSP-26 Request For Submission form. This revision will help us collect the most pertinent information about submitted cases up front, and prevent unnecessary delays in processing while we reach back out to gather additional data. Included in the KSP-26 revision is a renewed focus on evidence intake policies and procedures that are intended to help us get our stakeholders the best information in the shortest time possible. Additional information on all of these initiatives will be highlighted via the newsletter and additional targeted outreach. It is said that science never stops learning and evolving. The KSP Forensic Laboratories are readily embracing this concept!

Finally, I would like to draw your attention to the laboratory's Customer Survey. This survey is an important tool that we use to collect feedback from our customers and stakeholders, both positive and negative. We have revised the survey for 2021 and have set a goal to double the amount of feedback we receive from the survey this year. We want to hear from you! Please be as specific as you can in your survey responses so that we can most effectively respond to any concerns you have. The customer survey is also a GREAT tool to highlight exceptional performance from our employees. If you would like to give a shout-out or kudos to someone at the lab who went above and beyond, we would love to know! This survey is found on [Page 6](#) alongside laboratory contacts.

Thank you for taking the opportunity to read our newsletter. We sincerely hope that the information is helpful. If you have questions, concerns, or if I can assist you in any way, please do not hesitate to contact me at [jeremy.triplett@ky.gov](mailto:jeremy.triplett@ky.gov).

## Familial Searching - What It Is and Isn't

Familial searching is a different type of database search that has been implemented at KSP laboratories. Unlike a normal CODIS database search, a familial search looks to identify a possible family relationship between the evidence and an individual, not an exact match. The goal is to provide useful investigative leads when no exact match has been found through traditional searching. The laboratory uses additional DNA analysis to identify a possible family connection i.e. parent-offspring or siblings, between the evidence and an individual in the database.

Familial searching is not an available option for all cases submitted through KSP. It is limited to violent crimes, sexual assaults, those where public safety is a top concern, as well as unidentified remains. There are other qualifications for eligible cases including exhaustion of all leads by law enforcement, no prior match to the evidence in the database, and other criteria specific to the evidence quality. An official KSP form is required for all cases submitted for possible familial searching. The cases presented for searching are reviewed for eligibility by a committee comprised of individuals representing the laboratory, legal, and law enforcement.

It is important to note that familial searching is not the same as forensic genealogy, though both have proven successful in aiding a forensic investigation. Familial searching was used in the identification of the California serial killer known as the Grim Sleeper in 2010. The Golden State Killer was arrested in 2018 after being identified through forensic genealogy. Forensic genealogy uses genetic information from open-source companies to link an individual to evidence through shared ancestry and genealogical techniques; this application of genealogy to forensics is a newer one, and faces many public and legal concerns. In contrast, familial searching relies solely on the CODIS database that is maintained by the FBI.

More information on familial searching is available upon request, or you can contact DNA Database supervisor Regina Wells ([regina.wells@ky.gov](mailto:regina.wells@ky.gov)).

## Did You Know?

The laboratories are open and accepting new cases. An appointment is now required due to COVID regulations prior to evidence submission, Same day appointments are usually available, and officers can schedule via email or by calling the laboratory at the numbers provided on [Page 6](#).

Some changes are coming to key documents currently in use by the Kentucky State Police. The KSP 26 Request for Evidence Examination will soon be updated to include more case information and evidence details to increase the efficiency of evidence processing and handling. Once this document is finalized, it will be made publicly available to law enforcement entities and the older document version will not be accepted at evidence submission. The Physical Evidence Collection Guide is being updated to better aid law enforcement in the collection and preservation of evidence prior to laboratory submission. A Missing Persons reference submission form to be submitted in conjunction with the KSP 26 is being created as the older form for submission to the University of North Texas Center for Human Identification is no longer in use.

## Beating the Backlog—KY Sexual Assault Kit Initiative Update

The Kentucky State Police laboratories have been working toward eliminating the backlog of sexual assault kits in Kentucky. A statewide audit was conducted in 2015 which identified over 3,000 unsubmitted sexual assault kits. The following year the Sexual Assault Forensic Evidence Act (“SAFE” Act) was passed, which required all previously untested sexual assault kits to be tested. The SAFE Act also established deadlines for forensic testing and mandated improved policies and training for law enforcement handling sexual assault cases. In order to process the influx of sexual assault kits and meet the SAFE Act requirements, Kentucky received funding under DANY and SAKI grants. The KSP forensic labs were granted funds through the District Attorney of New York (DANY) to process the outstanding kits identified in the 2015 audit. The Attorney General received funding from the Sexual Assault Kit Initiative (SAKI) grant, of which a portion went to KSP for additional kit testing. Not only did the funding from these grants go to the elimination of the backlog, it was used by statewide organizations to prevent such a backlog from occurring in the future and to improve sexual assault investigations and prosecutions. The original and ongoing purpose of this effort was to bring justice to survivors.

To date, the laboratories are finalizing all sexual assault cases submitted through the DANY/SAKI grants. There have been 4,597 previously untested kits submitted to and processed by the laboratory, generating 1,182 profiles to be searched in the DNA database. Law enforcement agencies who have submitted cases will receive a notification email to complete a survey for each case, and BEAST should have laboratory report updates available. Some older cases may have been archived, so if a report is unavailable to download from BEAST a copy of the report can be requested from Amy Banta ([amy.banta@ky.gov](mailto:amy.banta@ky.gov)).

For more information and resources regarding the Kentucky Sexual Assault Kit Initiative, visit <https://www.kentuckybacklog.com>, or contact DNA Violent Crimes Supervisor Whitney Collins ([whitney.collins@ky.gov](mailto:whitney.collins@ky.gov)).



## Rapid DNA - Analysis and Applications in Kentucky

In 2017, Rapid DNA was legalized in the United States for use by criminal justice agencies with the passing of the Rapid DNA Act of 2017. This allowed for the implementation of approved Rapid DNA technology in law enforcement booking stations as well as accredited Forensic DNA laboratories for reference (buccal) sample analysis. So what is Rapid DNA and what can it do? Rapid DNA analysis is the fully automated (swab in, profile out) process of developing a DNA profile without human intervention. Following the passing of the Rapid DNA Act of 2017, the FBI developed and subsequently approved standards and procedures for the utilization of this technology for buccal (cheek) reference swabs. The intent of the law is to allow states with arrestee laws in place to integrate DNA collection with the booking process. After an individual is arrested, a buccal swab can be taken and processed in a booking station where the instrument would generate a profile within 90 minutes. This allows the DNA profile to be searched in the state and national databases with the arrestee still in police custody. Since no scientific analysis/human intervention is needed, technicians can be trained to operate the instruments outside of a standard forensic laboratory setting.



**ANDE Rapid DNA Instrument**  
Photo courtesy of the manufacturer

Currently, profiles generated from Rapid DNA instruments are not eligible for entry into CODIS, so crime scene samples must still be submitted to and processed by an accredited forensic laboratory. FBI guidelines require testing on crime scene samples to determine how much DNA is present to ensure that the DNA profile obtained is of the best quality possible. Forensic samples vary widely due to age, exposure, and nature of the sample, which affects the amount and quality of DNA it may contain. Most critically, crime scene samples often contain mixtures of DNA from more than one individual that requires interpretation by a trained forensic analyst. Rapid DNA instruments lack the capability to measure the amount of DNA present in a sample and run each sample the exact same way not knowing whether it will be a mixture, contain too much DNA for the system to handle, or no DNA at all. Once a swab is processed on the ANDE Rapid instrument, it is fully consumed so there is no chance for re-testing. For now, this prevents any profiles from crime scene samples generated on the instrumentation from meeting the technical requirement for eligibility for CODIS.

While Kentucky is currently not one of the 31 states performing arrestee DNA collection, other applications for Rapid DNA technology are being developed for the Commonwealth. For the last few years, forensic analysts with the Kentucky State Police have been evaluating the ANDE 6C instrument to determine how this technology can be applied in Kentucky. Several of these applications are outside the scope of day-to-day law enforcement including body identification in the cases of disaster victim identification (DVI), unidentified human remains (UHR), and missing persons. The Rapid instrument can be used to process family reference standards and victim samples. Those samples can then be searched in a database to establish familial relationships with the goal of making an identification faster than waiting for traditional methods. This technology is also going to be used in some standard law enforcement cases. Rapid DNA will be used on blood evidence obtained from property crimes, as well as samples from sexual assaults. These applications use what is known as Modified Rapid DNA, because while the instrumentation processing is still hands-free, analysis of the DNA profile by trained forensic personnel is required. The use of Rapid DNA in the Kentucky laboratory system will be online beginning with body identification this year.

For more information on Rapid DNA and its applications contact DNA Database Supervisor Regina Wells ([regina.wells@ky.gov](mailto:regina.wells@ky.gov)).

**Laboratory Management**

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Do you have topics you would like to see in future editions? Do you have questions you would like to see addressed? Please contact [danielle.jensen@ky.gov](mailto:danielle.jensen@ky.gov) with comments or suggestions.

**We want to hear from you!**

Please take a moment to fill out our KSP Forensic Laboratories 2021 Customer Satisfaction Survey

<https://www.surveymonkey.com/r/KSPLAB>