

# WHAT'S NEWS @ HFSC

HOUSTON FORENSIC SCIENCE CENTER • NOVEMBER-DECEMBER 2020

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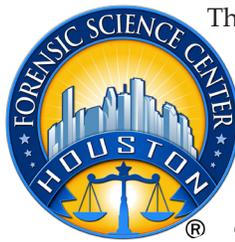
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The Houston Forensic Science Center's crime scene unit, long under-resourced, presented to its board of directors a five-year expansion plan that would begin the process of building a team better suited to Houston's needs and size.

HFSC's accredited CSU is responsible for collecting evidence and documenting crime scenes for the Houston Police Department. However, the 24/7, 28-member staff, which is made up of 22 crime scene investigators, only has resources to respond to homicides, officer-involved shootings, baby deaths and about 1 percent of aggravated assaults.

"What this really means is that if you're raped, stabbed or beaten in this city but don't die our specially trained crime scene investigators will not be there to perform the crucial job of properly collecting evidence and documenting the scene. This leaves an HPD officer to have to do this work in addition to all their other responsibilities," said Dr. Peter Stout, HFSC's CEO and president.

The five-year plan, presented at the November 13 board of directors meeting, would expand CSU to a team of 64 at a cost of \$9.13 million, including capital investments, such as vehicles and equipment.

"If the city decides to support this plan it will be enormously beneficial to the community and to

public safety," Jerry Pena, director of crime scene and multimedia, said. "But this will really only allow CSU to properly respond to current needs and possibly a few more aggravated assaults. To begin to have this type of crime scene investigation at lesser crimes, as happens in other large metro areas, Houston really needs a CSU of between 100 and 150 people."

Chicago, for example, a city with a similar population but a smaller geographic footprint, has about 200 CSIs, allowing the group to respond to property crimes.

HFSC's five-year plan runs from 2022 to 2026 and would add six CSIs and one supervisor annually. Due to the intense training required so a CSI can work independently, HFSC has reserved spots at the University of Tennessee's National Forensic Academy, the nation's premier crime scene school. Each trainee will spend 10 weeks learning basic crime scene investigation skills before returning to HFSC to receive on-the-job training and to learn specific protocols.

The plan also accounts for the need for additional vehicles, cameras, 3D scanners, office space and other equipment that would be required for the expansion.

"Expanding CSU will almost definitely impact other forensic functions as more evidence is collected, however, it is difficult at this stage to accurately assess what that might look like," Dr. Stout said. "What is clear, though, is to have an immediate impact on public safety, HFSC's CSU must grow."



# A Few Words From Our PRESIDENT

HOUSTON FORENSIC SCIENCE CENTER

**Peter Stout, Ph.D.**  
CEO/President

2020. What a doozy. Pandemic. Racial unrest. Meteoric increase in homicides. A contentious presidential election. A record-breaking hurricane season. And we thought murder hornets were a problem. We will all be happy to bid 2020 good bye and hope it isn't simply the prequel to a far worse 2021. Yet through all of this mayhem, the Houston Forensic Science Center continued operating, providing forensic results while balancing that with the need to protect the health and safety of our staff. Although I am proud of our staff's resilience, creativity and dedication through this difficult time, I also know that this year has highlighted weaknesses we all knew existed but hoped could be dealt with another day.

Thanks in part to 2020, that day has come, especially for the crime scene unit. As we look toward 2021, one of my focuses will be to work toward expanding the crime scene unit and ensuring we not only have the resources to meet Houston's needs but that in so doing we don't damage the mental health of our staff, a real concern at the moment since the group is so small each investigator often responds to at least one homicide a shift and sometimes more.

We have also learned ways to become more flexible and adept at responding to a situation such as a pandemic when working from home is a necessity. We have made a great deal of progress toward making this transition easier and far more productive and are now working toward more paperless workflows that will ultimately benefit our processes when life goes back to "normal."

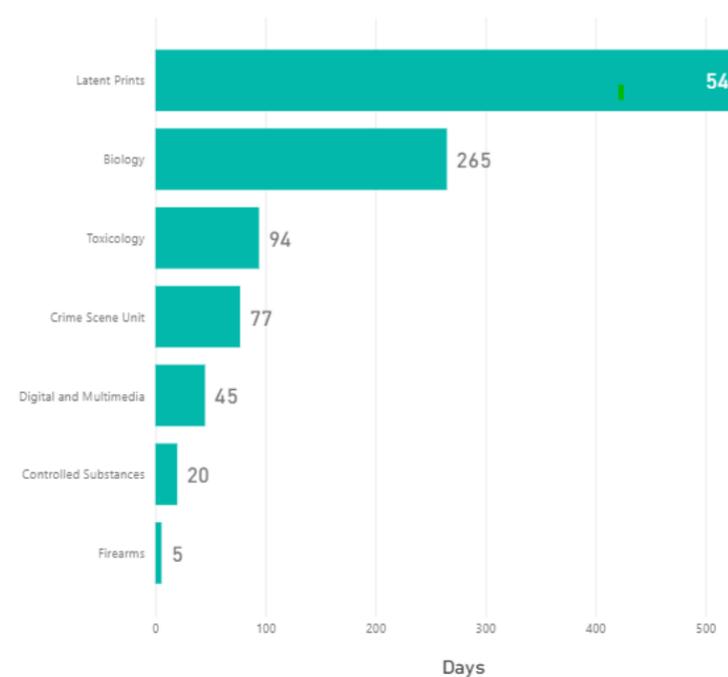
Still, the single biggest thing we are seeing during this year is how vulnerable we are because of our toe-the-line resources, not only in CSU but in other sections as well, including forensic biology/DNA and toxicology. The city has invested a great deal in HFSC and I am confident we will continue to meet expectations and enjoy that support. Change, especially to resources, does not happen overnight. There are other budgetary priorities and every city agency and department struggles with this challenge.

This will be a time to learn the lessons of the past year, look for more efficiencies and prioritize areas where resources are an immediate need. We will work with our stakeholders to make those decisions and to ensure we continue to provide the justice system with the sound, objective, reliable forensic results it depends on to do business.

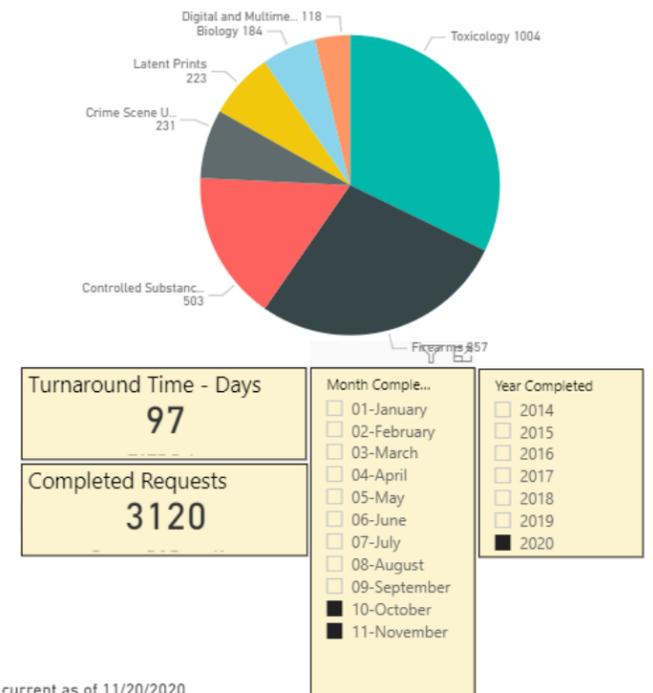
Peter Stout, Ph.D.  
CEO/President

# HFSC At A Glance

Average Turnaround Time for November 2020



Requests Completed by Section



Turnaround Time - Days: **97**

Completed Requests: **3120**

Month Completed: 01-January, 02-February, 03-March, 04-April, 05-May, 06-June, 07-July, 08-August, 09-September, 10-October, 11-November

Year Completed: 2014, 2015, 2016, 2017, 2018, 2019, 2020

This data is current as of 11/20/2020.

The graphic here depicts cases completed and requested from October and through November 20.

As has been the case for most of 2020, the toxicology section has been one of the most productive sections because they recently hired and trained several new analysts who are now helping the group eliminate a backlog. That backlog grew largely because the Houston Police Department increased enforcement of impaired driving and HFSC is only now putting the resources in place to respond appropriately.

The graphic also shows, however, the significant productivity of the firearms section. This is largely the result of an increase in requests for uploading cartridge casings from seized firearms into the National Integrated Ballistic Information Network (NIBIN,) the national database overseen by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF.) The ATF requires those requests to be completed within 48 hours since the information yielded \_ linkages between firearms and crimes \_ can be vitally important information in the first crucial days of an investigation.

Overall, HFSC's average turnaround time in the past two months has been nearly 100 days. This is in large part the result of the work done to eliminate backlogs. HFSC begins its turnaround time count from the moment a request is received and ends it when a report is released. As the oldest cases in a backlog are completed, the turnaround time increases.

For more information, please visit [www.houstonforensicscience.org](http://www.houstonforensicscience.org)

# CODIS DNA database brings info to investigators

By Jordan Benton

The Houston Forensic Science Center has used the pandemic months to shift some of its forensic biology/DNA section's focus to uploading eligible DNA profiles into the national database, leading to a 127 percent increase in "matches," information that potentially leads to vital investigative information used by law enforcement to solve crimes.

The Combined DNA Index System, or CODIS, is a three-tiered, FBI-run database that houses DNA profiles of convicted offenders and unknown profiles found at crime scenes. The goal is to get DNA "hits" that can help investigators correctly identify suspects.

HFSC's CODIS unit has increased its notification output in part due to a paperless review process implemented to allow analysts to work

and interpret DNA data that once would not have been usable, which is also leading to more potential DNA matches.

The CODIS unit is responsible for the use and oversight of HFSC's access to the national DNA database. There are stringent rules and mathematical calculations at the state and national level that must be met prior to a DNA profile being uploaded.

"The CODIS unit acts as gatekeepers. We determine what is eligible to be entered into CODIS based on a list of FBI rules we use," Clay Davis, an HFSC forensic biology/DNA analyst, said. "We review data and ensure everything was entered properly from start to finish."

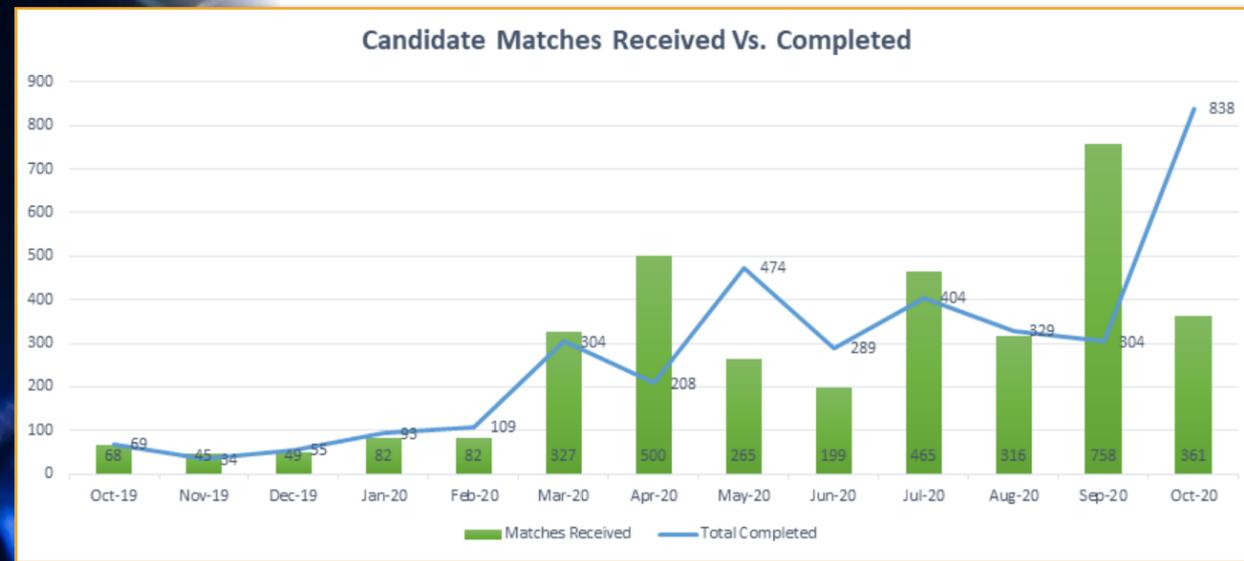
The first step in that process is a "match," when the software notifies

120 "hits" to investigators up from 44 in October 2019, a 172 percent increase in notifications. The matches that the DNA analysts reviewed increased from 1,474 in all of 2018 to 3,355 through early November 2020.

Similar to most other places in the state and the nation, February was the last "normal" month for HFSC operations prior to the COVID-19 outbreak. As shutdowns forced HFSC's sections to implement rotating schedules in March, the

the FBI requires CODIS-approved labs, such as HFSC, to do a thorough review of all data generated by a private laboratory to ensure its accuracy before uploading any eligible profiles to the database. Having analysts solely focused on reviewing outsourced lab reports at home led to a significant uptick in profiles uploaded as well as "leads" for investigators.

In February, the CODIS unit submitted 57 entries that produced 82 matches. In March, the number slightly increased to 60 entries that led

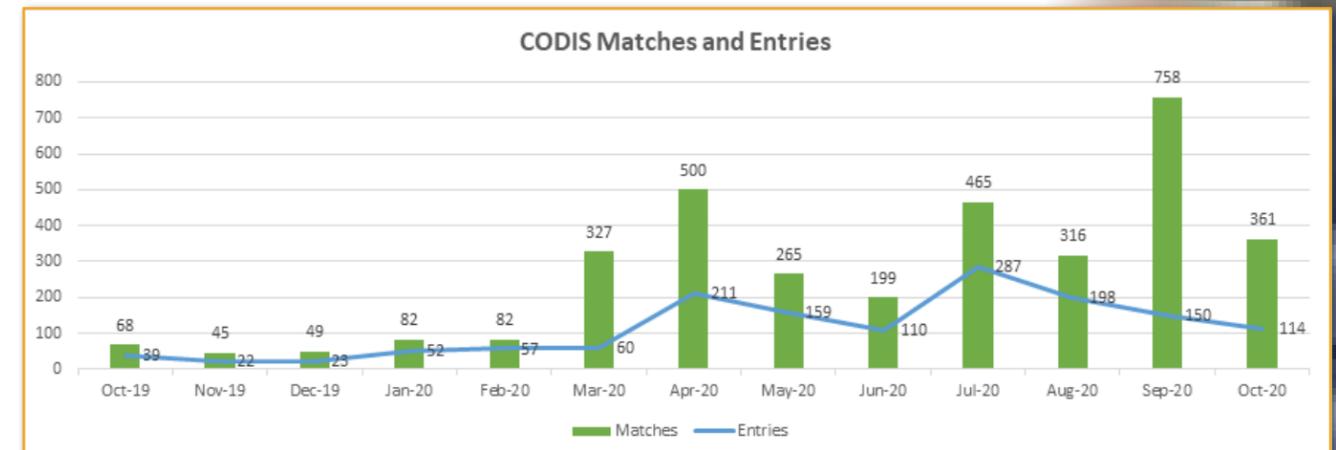


from home during the pandemic.

The forensic biology/DNA section also rolled out its new probabilistic genotyping software in late 2019 - also known as STRmix. The software allows analysts to use

that two profiles may be the same. A DNA analyst then manually reviews the "matches" and determines when the profiles are in fact the same, calling it a "hit."

In October alone, HFSC sent

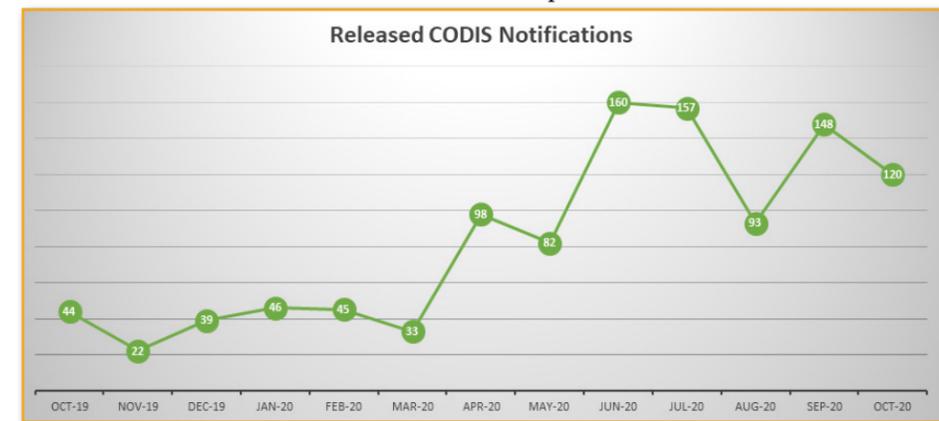


forensic biology/DNA section created a paperless review process to ensure analysts could work remotely.

At the beginning, a team of analysts focused solely on reviewing data generated by a commercial laboratory that completed some DNA work for HFSC. Private laboratories do not have access to CODIS. As a result,

to 327 matches. By April, the unit had completed 211 entries leading to 500 matches.

"The pandemic forced us to use our resources better," said Rebecca Gonzales, HFSC's assistant CODIS administrator. "Analysts divvied up duties, and we became more effective in our process, so no time is wasted."



# Leg 2021

## What is HFSC's focus?

Marijuana. Marijuana. And more marijuana.

That will be the Houston Forensic Science Center's primary focus when the Texas Legislature convenes in January 2021.

The primary goal will be to get resources for public crime laboratories tasked with testing marijuana products



and also to improve legislation passed in 2019 that legalized hemp and changed the definition of marijuana, making it more difficult \_ and in some cases almost impossible \_ for forensic labs to conduct the analysis required by the justice system to enforce existing laws.

"We are not concerned with, nor should we be, the debate over legalization and decriminalization of marijuana and items created from its cannabinoids," said Dr. Peter Stout, HFSC's CEO and president.

"Instead, we are narrowly focused on having the resources and the ability to ensure we can provide the forensic results needed to enforce existing law. At the moment, we have neither," added Dr. Stout, who is also president of the Texas Association of Crime Lab Directors.

In June 2019 Texas' definition of marijuana changed to align with the Federal Farm Act and legalize hemp. The new law defines marijuana as any plant or item with

a 0.3 percent or more concentration of tetrahydrocannabinol (THC,) the psychoactive ingredient in the Cannabis plant that creates a "high." Anything with a THC concentration of 0.3 percent or less is now defined as hemp and is legal.

That change, however, required crime laboratories to determine the concentration of THC in plant and other items, something they never had to do before to prove that a given product was marijuana.

It took until September for HFSC and two other large public crime laboratories to have the capability to do this testing in plant material.

As of yet, none have the ability to do this analysis on non-plant materials, such as edibles, oils, dabs, shatters oils and other products.

And the testing that can be done on plant material is more labor intensive and takes far longer to complete. To test non-plant materials, crime laboratories will need to purchase new instruments and spend months validating methods.

"This has been a real roller coaster ride not only for the crime labs but for the entire criminal justice system. Marijuana prosecutions largely came to a screeching halt across the state once the law changed," Dr. Stout said.

The problem at the moment is that even if crime labs had the resources to

purchase the instruments needed to test non-plant products \_ which they don't \_ the language in the current law makes it nearly impossible to complete the analysis in any meaningful manner.

"There are words in the law, such as "by dry weight," that raise questions like how dry is dry and how do you dry an oil?" Dr. Stout said. "And a cookie, for example, could have far less than 0.3 percent THC, making it legal hemp, but still be significantly impairing."

Other states, such as Colorado and Oregon, are tackling some of these issues by looking at "doses" or "servings" of THC, and Texas could try to tackle this in a similar manner.

"Cannabinoids are notoriously difficult to analyze and present varied challenges," said Dr. Stout. "Our goal is to work with the legislature to ensure the language in the law allows crime laboratories to do their work and guarantee they have the resources to do so credibly."



## Lean six sigma Latent prints

The Houston Forensic Science Center has launched a process improvement project designed to identify resource needs and further opportunities to improve efficiency in the latent print section.

The latent print section, the group that is responsible for developing fingerprints from evidence items, determining their suitability for comparison and then conducting that examination, has been operating for years under the shadow of a large backlog of more than 2,200 requests.

The causes of the backlog have been known for some time and include the crime scene unit's rapid improvement in collecting latent print evidence, which exponentially increased the number of items in each case. Latent prints is also almost completely reliant on human labor and requires examiners to manually examine and compare each developed print.

The process improvement team will be looking for opportunities to increase efficiency in the workflow as well as pinpoint where and what resource needs the section might have. This will include trying to determine whether more examiners would be needed, and if so how many, as the crime scene unit expands.

The team includes several staff from the latent print section as well as one from firearms, another pattern comparison discipline, and folks that excel at analyzing data.

"HFSC has had great success using lean six sigma principles to improve processes and increase efficiency," said Aimee Grimaldi, the project engineer that will oversee the team.

"This is a unique challenge that will take at least nine months to complete and will depend heavily on the collaboration and support not only of the project team but of all internal and external stakeholders," Ms. Grimaldi said.

# Continuing Education **HFSC's investment**

By Jordan Benton



The Houston Forensic Science Center (HFSC) implemented a company-wide continuing education goal to align with industry recommended standards and further employee development.

All HFSC staff are required to complete 16 hours of continuing education annually. The requirement is based on a standard created by the Organization of Scientific Area Committees for Forensic Science (OSAC,) a federally based group of hundreds of practitioners who collaborate to create industry standards. The Texas Forensic Science Commission, which licenses forensic practitioners to practice in the state, also has a continuing education requirement.

This requirement helps ensure staff are properly trained and are continually expanding their knowledge.

HFSC's board of directors approved a resolution in 2019 that committed the lab to voluntarily adopt and implement all applicable OSAC standards posted to the registry.

"The 16-hour continuing

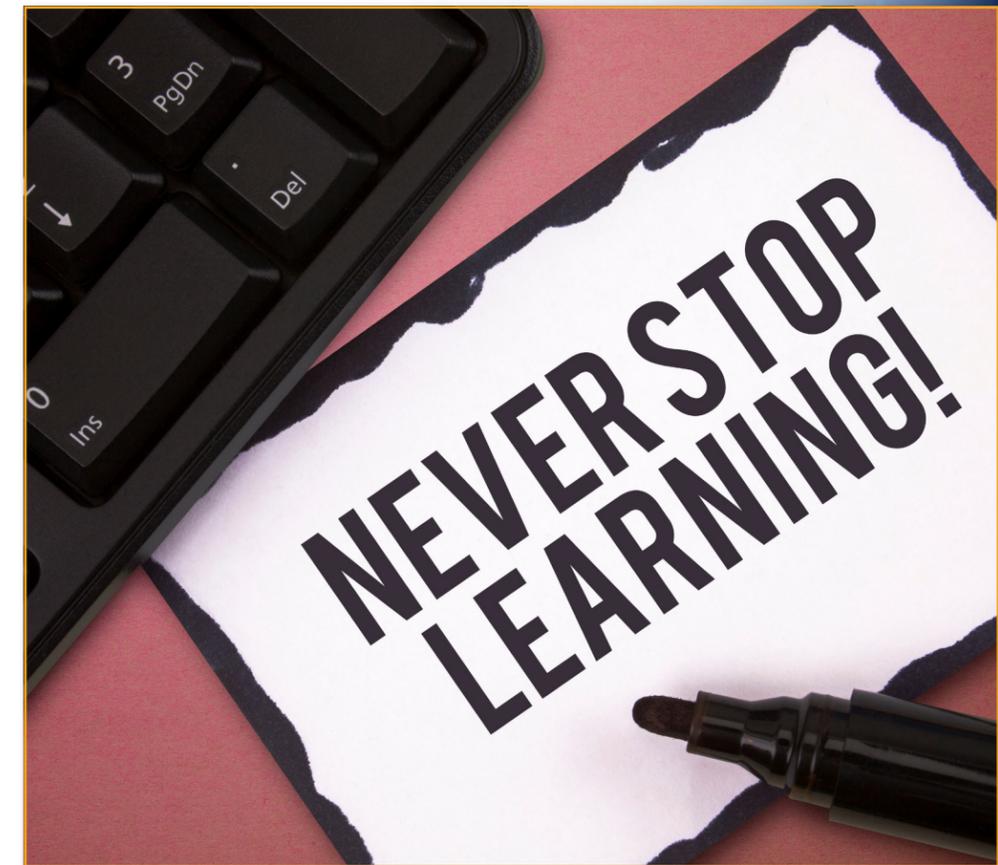
education requirement puts a spotlight on our commitment to developing staff at all levels," said Dr. Amy Castillo, HFSC's COO and vice president.

Staff developed an all-encompassing tracking system that also provides information on qualified trainings and visibility on whether the goal is being met.

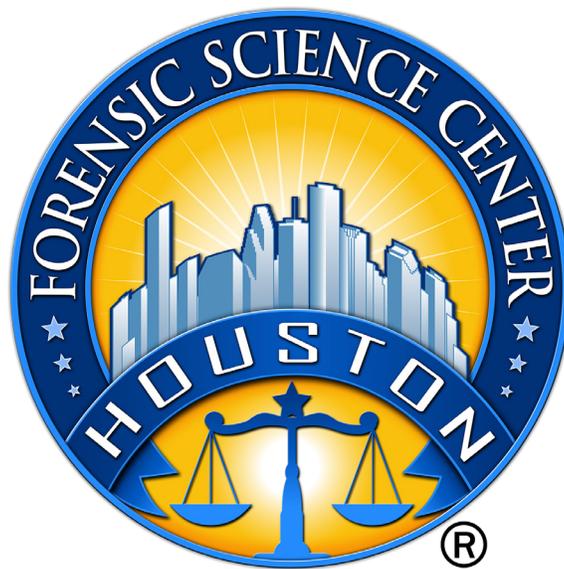
"The information is displayed on a continuing education dashboard that we built internally. The dashboard can be filtered by staff name, section, date range and more," Dr. Castillo said.

This dashboard not only adds a layer of visibility and accountability for staff, but it also helps analysts stay organized when it comes time to renew certifications or state-mandated licensing requirements.

"We've ensured staff have a wide selection of webinars, books, community outreach events and in-house training to help them reach their goal," Dr. Castillo said. "We want to send a message that staff are worth this investment, and training is never a burden, but a priority."



*The Houston Forensic Science Center is requiring all staff to receive 16 hours of continuing education each year, a goal that aligns with standards set forth by the Organization of Scientific Area Committees for Forensic Science (OSAC.) HFSC built a dashboard to make it easier for staff and the company as a whole to track progress toward achieving the goal. Training and continuing education are crucial to ensure staff remain up-to-date with the science and the latest research. It also provides growth opportunities for those interested in leadership and management classes.*



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