

## Developing forensic DNA capabilities around the globe with rapid DNA technologies

### Summary

- Guyana law enforcement implements a rapid DNA program using technology from Thermo Fisher Scientific to run reference samples, eliminating the need to send urgent cases out of the country for a simple DNA profile
- Over 20x lower cost per sample is projected, with the important additional benefit of getting answers back the same day an investigation is opened
- Demonstrates how a newly established laboratory can quickly and cost-effectively add DNA capabilities

### Overview

For decades, law enforcement agencies in Guyana had to send DNA samples abroad for testing to help solve crimes. To enhance Guyanese forensic crime-solving capabilities, the Guyana Forensic Science Laboratory (GFSL) in Georgetown was founded in 2014, with the intention of moving toward performing on-site DNA testing to reduce the time and cost involved in sending evidence for testing abroad. In 2019, the GFSL acquired a rapid DNA instrument and is now ready to perform its own DNA testing.

### How the program works

Guyana began using DNA evidence to help solve crimes in 1993. While the country's law enforcement agencies have used DNA testing successfully—for example, to help confirm the identities of the remains in two high-profile investigations—in each case, samples had to be sent to an overseas lab. This presented two significant challenges to investigators: time waiting for results, and high costs. Guyana must spend about \$7,000 USD each time DNA samples are transported and tested overseas, which includes airfare for someone to bring the sample to and from the overseas lab.



Delon France, director of the Guyana Forensic Science Laboratory

In 2019, through funding from the Inter-American Development Bank (IDB) and the Guyana Ministry of Public Security, the GFSL purchased a rapid DNA instrument from Thermo Fisher Scientific. In addition to training four lab scientists to use the new instrument, the lab provided several training sessions for Guyana Police Force (GPF) crime-scene personnel on how the instrument would be integrated into their procedures to enhance their crime-solving efforts.



**Guyana Forensic Science Laboratory's rapid DNA instrument.**

After over 25 years of outsourcing sample testing abroad, the GFSL received their rapid DNA instrument in May 2019.

GFSL director Delon France explains that his team will conduct DNA testing for paternity testing, matching evidence to a suspect, and family mapping, where familial DNA can help identify a suspect even without the particular suspect's DNA. A specific advantage of having such a state-of-the-art instrument is that rapid DNA technology can provide high-quality forensic profiles in as little as 90 minutes, enabling law enforcement personnel to generate real-time investigative leads and identify suspects faster.

## **Program results**

Just two months after receiving the instrument, the Guyanese security sector is now ready to conduct human identification using DNA analysis, following the commissioning of the rapid DNA instrument at the GFSL.

"The lab is now a national pioneer for human identification," says France.

It is estimated that the instrument will help cut the cost per test from ~\$7,000 USD to under \$300. Moreover, it is expected to reduce the time for an investigation, which promises to have a significant effect on crime-solving capabilities.

## **Future opportunities**

The acquisition of a single, affordable rapid DNA instrument has revolutionized the procedures and goals of law enforcement in a country in the process of developing its forensics program. France notes that the Guyanese security sector is now advocating to establish a national DNA database, which will involve a new legal framework at the national level around DNA acquisition, storage, and privacy. A national database will enable more hits with the rapid DNA technology, and promises to help investigators solve cold cases and exonerate individuals who were wrongly convicted.

Beyond the national strategy, France sees the potential to become a regional and even global resource. "We are currently working toward international accreditation, with the aim to make our service more marketable to initiate activities under one of our core functions and objectives, which is to make the organization financially viable, supported by our business plan that is drafted for local, international and regional clients."

## **Sources:**

1. <https://www.kaieteurnewsonline.com/2019/06/27/six-years-later-98m-spent-to-give-forensic-lab-dna-testing-capabilities/>
2. <https://guyanatimesgy.com/forensic-lab-finally-able-to-conduct-dna-tests/>

Find out more at [thermofisher.com/rapidDNA](https://thermofisher.com/rapidDNA)

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