

NIJ, UC Berkeley, and IntegenX—Bringing Short Tandem Repeat (STR) DNA Identification to Law Enforcement

Rapid DNA Analysis System Speeds Up DNA Identification

Moving Knowledge from Research to Impact



“Ultimately, I think the most powerful application of this technology is going to be performing immediate analysis on DNA samples that are taken when people are arrested for felonies, because it will help keep serial criminals off the streets.”

Richard Mathies, PhD
Chemist and Professor
UC Berkeley

Synopsis of Problem and Solution

In July 2014, Richland County deputies pulled over a vehicle because the passengers were not wearing their seatbelts. While a deputy was speaking with the driver at the rear of the vehicle, the man in the passenger seat slid over to the driver’s seat and drove away.

The man eventually stopped the vehicle and fled on foot, but was arrested shortly after. Crime scene investigators lifted DNA off of the man’s clothes and sent it to the department’s forensics lab for processing. The results showed that the DNA did not belong to the suspect; it belonged to another man who had been shot earlier in the day when he was confronted by an armed robber. The DNA was on the suspect’s clothes because of a scuffle that occurred during the robbery attempt.

Richland County Sheriff’s Department staff were able to run the DNA profile they lifted from the suspect in less than 2 hours because they operate an IntegenX RapidHIT™ DNA analysis system. Because of this, the department was able to hold the suspect with probable cause until he was charged with armed robbery and attempted murder. In many U.S. crime labs, it would have taken days or weeks to process the same sample because of the absence of rapid DNA scan technology.

Benefits

- Produces standardized DNA profiles from buccal swabs and other human samples in less than 90 minutes
- Compatible with existing DNA databases
- Small and easy to operate
- Can be used outside of a controlled laboratory setting
- Capable of running one to seven samples in a given cycle

The Future

- Rapid DNA systems will be used more widely as federal, state, and local laboratories test, evaluate, and validate them for law enforcement use.
- Widespread use of rapid DNA systems will help law enforcement agencies save time, money, and manpower.

Much of the technology behind the RapidHIT™ system was developed with NIJ support funding by Dr. Richard Mathies at the University of California (UC), Berkeley. His research and IntegenX's (formerly Microchip Biotechnologies, Inc.) resulting products are now being used to get criminals off of the streets quickly, which stops them from committing more crimes.

NIJ-Funded Research

Dr. Richard Mathies, chemist and professor at UC, Berkeley, was awarded NIJ funding to develop faster, more reliable, higher throughput, more sensitive, and more integrated technologies for forensic STR DNA identification.

Bringing Research to Practice

- The results of Dr. Mathies' research have been published in seven different scientific journals and presented at five conferences.
- From 2007–2011, many of the technologies developed with NIJ funding support by UC Berkeley were licensed to IntegenX of Pleasanton, California.
- IntegenX's RapidHIT™ DNA analysis system was launched in the United States in October 2012.
- In February 2014, the Richland County Sheriff's Department became the first sheriff's department in the United States to utilize the RapidHIT™ system. The systems have since been used by law enforcement in other states, such as Arizona and Florida.
- RapidHIT™ is also being used internationally, in countries such as China, Russia, and Australia.



IntegenX's RapidHit DNA analysis system incorporates techniques and improvements that were developed with NIJ support funding for UC Berkeley.

More Information

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