Partnership in Criminal Justice:
Answers When You Need Them Most

Heino Teifel, Sr. Business Development Manager Rapid DNA
The world leader in serving science

- >70,000 employees
- 5,000 R&D scientists/engineers
- $1B invested in R&D
- >$24B in revenue
Complete Forensics Portfolio

- Sample Collection
- Trace Evidence Detection
- Forensic Toxicology
- Forensic Genetics
- CBRNE detection
- Autopsy equipment
- Controlled substances & suspected narcotics
- General lab equipment

We enable our customers to make the world healthier, cleaner and safer
For over 3 decades, forensic scientists around the world have used DNA to transform global criminal justice, and we’ve led the way in supporting them with leading-edge innovations that help them provide answers.

In this presentation, you’ll learn about:

- What is Thermo Fisher Scientific’ vision for 21st century crime fighting
- How can Rapid DNA technology be used in crime labs and law enforcement agencies to help solve crimes faster
21st century commitment and partnership in DNA forensics

- **5-dye Technology Mobility Modifiers**
  - 2001

- **6-dye Technology**
  - 2012

- **Degradation Index**
  - 2013

- **NGS HID Panels**
  - 2014

- **Yfiler Plus™ Kit**
  - 2015

- **Virtual std curve**
  - 2017

- **RapidHIT ID™ system**
  - 2019

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**GeneMapper™ ID-X Software**

**Converge™ software**

**HID Real-Time Analysis Software**

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**2000-2007 31xx-series**

**2010 3500-series**

**2013 Ion PGM™ System**

**2015 Automated NGS Workflow**

**2016 Ion S5™ System**

**2017 QuantStudio™ 5 System**

**2019 SeqStudio™ System**
March 2018 Thermo Fisher Scientific Acquires IntegenX

- **Thermo Fisher Scientific** is the worldwide leader in forensic DNA testing.
- **IntegenX** is the worldwide leader in Rapid DNA.

Thermo Fisher Scientific Acquires IntegenX, Provider of Leading Rapid DNA Technology for Human Identification

NEWS PROVIDED BY
Thermo Fisher Scientific
Mar 16, 2018, 06:23 ET

CARLSBAD, Calif., March 16, 2018 /PRNewswire/ -- Thermo Fisher Scientific Inc., the world leader in serving science, today announced that it has acquired IntegenX Inc., which provides a rapid DNA platform for use in forensics and law enforcement applications. IntegenX products significantly enhance Thermo Fisher’s existing HID portfolio and complement its leading human identification chemistries, as well as its qPCR and capillary electrophoresis systems.
Revolutionary Benefits

The RapidHIT ID System:

- Generates CODIS-eligible profiles with confirmed sample types
- Uses NDIS-approved chemistry with the Applied Biosystems™ GlobalFiler™ Express PCR Amplification Kit
- Offers compatibility with established DNA databases

Producing DNA profiles has never been so fast and easy

- Trusted lab-quality forensic DNA profiles with same GFE chemistry used on legacy CE systems
- Improved efficiency—as fast as 90 minutes for answers with reference and investigative lead samples
- Compact size and ease of use—minimal space needs; set up in a day and produce results in the lab or field
- Streamline analysis—fast sample matching, familial search, and kinship analysis using RapidLINK Software
Revolutionary Benefits

The RapidHIT 200 System:

- Generates CODIS-eligible profiles with confirmed sample types
- Uses NDIS-approved chemistry with the Applied Biosystems™ GlobalFiler™ Express PCR Amplification Kit
- Offers compatibility with established DNA databases

Up to 8 samples in one run
3 or 4 samples per cartridge and
2 cartridges per run

Effectiveness with multiple sample types and run conditions
With results published in peer-reviewed papers
The RapidHIT ID System compresses a standard DNA analysis workflow into an automated system.

All steps that the lab performs today are conducted inside the box

Watch a video to see how easy it is to use the RapidHIT ID System at thermofisher.com/rapiddna
Use the Same System to Profile Different Sample Types

Sample-to-Answer
- Buccal swabs

Investigative leads
- Blood stains
- Cigarette butt
- Swab of a cup lip
- Knit cap
RapidLINK Software seamlessly connects you to the lab

**RapidLINK Software** is data management software that centralizes information about instrument operations and performance, as well as results data.

**From a single view, an administrator can:**
- Confirm the status of all locations contributing DNA profiles to the RapidLINK Software for forensic review
- Check the number of runs per day

**Using Applied Biosystems™ RapidLINK™ applications (apps), a trained forensic scientist can:**
- Transform DNA results into rapid intelligence
- Perform expert forensic review of all submitted profiles
RapidLINK Apps Transform Results into Rapid Intelligence

RapidLINK Match Application
Matching is on all the time, so you know immediately when there’s a match

RapidLINK Staff Elimination Database Application
Automatically detect contamination from staff and manufacturing employee profiles

RapidLINK Familial Application
Search selected samples for familial matches within your RapidLINK Software database

RapidLINK Kinship Application
Verify family relationships from specific samples in your RapidLINK Software database
Unlocking a World of Rapid Intelligence

Partners in forensics, law enforcement, and public safety can benefit from Rapid DNA results in many applications

**Investigative lead testing**
- Generate investigative leads from DNA in real time that can help solve property crimes, auto theft, and other local crimes

**Decentralized databasing**
- Generate hits while a suspect is still in custody

**Reference samples / Arestee testing**
- Maximize resource allocation between routine single source samples and more complex casework samples

**Disaster victim identification**
- Implement a fast and easy field deployable solution for immediate identification
Testing DNA from Arrested Suspects Before Rapid DNA Technology

Going from sample to results is a multistep, time- and labor-intensive process

1. Collect sample from arrested suspect
2. Log sample into police evidence system
3. Transport sample to forensic lab
4. Log sample into lab’s accessioning system
5. Place sample in evidence vault
6. Remove sample from evidence vault
7. Process sample
8. Review sample data
9. Report sample results to police
10. Arrest suspect a second time
FBI’s vision of arrestee testing in the booking station

The RapidHIT ID System enables testing at the point of action in 90 minutes or less

Collect sample from arrested suspect

Process sample on location in 90 minutes or less

CODIS search results while still in custody
Most forensic labs batch samples as part of their conventional benchtop process—the sudden need for a single sample run can disrupt a large, batched-sample workflow.

- What happens when you receive a single sample from an urgent, high-profile case?
- What if you have to run a confirmatory test on a CODIS match to meet a state requirement?

The RapidHIT ID System makes it easy to process urgent samples quickly and without a batch.
Pioneering use of the RapidHIT ID System in a mobile laboratory environment

The Korps landelijke politiediensten (KLPD) [National Police Services Corps]—the Dutch national crime unit charged with special investigations—launched a RapidHIT instrument-equipped mobile crime vehicle in 2012.

**Study**

In 2013, a KPLD-funded study of the use of RapidHIT technology in their mobile crime lab showed:

- Profiling success with 59 of 62 buccal swabs giving full and concordant genotypes
- 15 mixed and 37 neat saliva samples robustly profiled showing good precision, repeatability, and reproducibility

**Results**

The study concluded that informative profiling results can be obtained when the system is placed in a mobile vehicle and the RapidHIT system is “apt for buccal swabs and promising for casework-like samples.”
Time matters—too much can happen between testing and results.

A DNA match led to Imiela’s capture and conviction, but faster DNA results might have helped prevent his last crime.

**The M25 rapist**

Antoni Imiela

**Crime:** committed a series of rapes along England’s M25 motorway between 2001 and 2002. He was also eventually found guilty of a cold-case rape in 1987.

**November 19:**

Based on a neighbor’s suspicion, Imiela was taken to a police station to provide a DNA sample and allowed to leave while awaiting DNA results.

**November 21:**

Imiela abducted and assaulted a 10-year-old girl. He told his victim that he “had nothing to lose.”

• Myth or Fact?

• The RapidHIT 200 and the RapidHIT ID are for reference samples only.

• Myth

• Although both instruments were developed for testing reference samples, many customers have had success using them with crime scene type samples.

• Using rapid DNA instruments with reference samples is fairly straightforward, but using them with crime scene samples requires training in order to know which samples should and should not be attempted.

• Responsible use of rapid DNA testing involves understanding when it may jeopardize the evidence.
• Reference samples can be run on the RapidHIT 200 or the RapidHIT ID and then be uploaded to CODIS.

• **FACT**
  - Thousands of reference profiles obtained from the RapidHIT 200 and the RapidHIT ID currently reside in NDIS and in the NDNAD (UK).
  - Both instruments are NDIS approved for use as a Modified Rapid DNA Analysis method, meaning they can be used to generate profiles from reference samples that can then be uploaded to NDIS after manual review by a forensic DNA expert.
Disaster Victim Identification (DVI) / Unidentified Human Remains

Victim identification requires time and effort

- Postmortem samples
- Antemortem samples
- Family reference samples
- Comparison of victim samples with family samples
- Provide closure for families

Rapid DNA can be used to improve efficiency and to provide families with answers in a more timely manner.
Rapid DNA During Mass Disaster

DNA database
The RapidHIT ID System was used to aid victim identification in the Oakland Ghost Ship Warehouse disaster:

- All 36 victims were identified by the Alameda County Sheriff's Office’s Coroner's Bureau
- Identifications were made via fingerprint, dentition, and body markings
- Upon request, DNA testing was performed on four of the victims:
  - The California Department of Justice performed confirmatory DNA testing on the four victims using traditional/validated DNA procedures
  - The Alameda County Sheriff's Office’s Crime Laboratory performed testing using the RapidHIT ID system

Results

Samples from oral swabs and toothbrushes were run on the RapidHIT system, and full profiles were generated and used for presumptive identification. These results were later confirmed by the California Department of Justice DNA Laboratory (CalDOJ) and proved consistent with their results. This was valuable information for law enforcement since it provided preliminary results informing law enforcement, including the medical examiners, that they were making the appropriate associations early in the disaster event.

Victim Identification

Using the RapidHIT ID System, a nearly full profile was produced from a fire victim’s body in Panamá

At Panamá’s national crime lab in 2017, the Instituto Medicina Legal y Ciencias Forenses (IMELCF), medical technologists were able to identify a victim of a devastating home fire. Taking a sample from a crude clavicle bone extraction—using no decalcification step—the lab technicians processed it using the RapidHIT ID System. A DNA profile of 20 of 24 loci was identified within hours. The profile enabled a kinship comparison to the victim’s brother to confirm the victim’s identity.
Myth or Fact?

- Victim ID ???

- Myth
We Can Make a Difference in Public Safety by Speeding Up DNA Results

Faster DNA testing is already making a difference in the US

Government Accountability Office found that the reported number of backlogged requests for crime scene DNA analysis at state and local government labs has **increased by 85 percent** from 2011 through 2017.

Bensalem Township, Pennsylvania saw a 42% reduction in property crimes after implementing a local DNA database program and Applied Biosystems RapidHIT ID.

Rapid DNA for Investigative Leads

Can be used for direct comparisons

- Comparing crime scene samples to suspect standards in the same case
- Excluding suspects
- Valuable but limited

Most useful when paired with a DNA database

- Existing database (e.g. CODIS)
- Build your own
- Both (build on existing database)
  - Volunteer samples to include those not yet in the system
Investigative Lead Testing

The Orange County District Attorney’s (OCDA’s) Office in Southern California achieves impressive investigatory results using the Rapid DNA program.

“This [Rapid DNA program] makes getting corroborating evidence a lot easier.”

Jennifer Contini, Assistant District Attorney, OC

Rapid DNA provides corroborating evidence while a suspect is in custody

The OCDA’s DNA Unit has also assisted other agencies in homicide investigations. In one example, the Orange Police Department identified two homicide suspects from surveillance video. One suspect left blood on a wall. The suspects voluntarily submitted to buccal swabs. While they were interviewing the suspects, the OCDNA investigator called and informed the detectives which suspect’s blood was on the wall.

Hardesty, Greg. “OCDA’s Rapid DNA team is a big hit for Garden Grove PD, other OC police agencies.” Behind the Badge GGPD. March 24, 2017. behindthebadgeoc.com/cities/ggpd/ocdas
• Myth or Fact?

• Crime scene samples can be run on rapid DNA instruments and then be uploaded to CODIS?

• Myth
  • DNA profiles from crime scene samples cannot currently be uploaded to CODIS if they have been generated on a rapid DNA instrument.
  • FBI requires the DNA from crime scene samples to be quantified during sample processing in order to be uploaded to CODIS.
  • FBI does not have this requirement for reference samples (which is why they can be uploaded).
Ways DNA databases produce results

- Run reference samples to compare to casework unknowns
- Run casework unknowns to compare to reference samples
How does CODIS work?
As DNA Databases Have Grown, Hits increase and Crime decreases

CODIS

17 million reference profiles
1 million casework unknowns

DNA database options

CODIS vs Private Database

Pros:
Existing established database
Links all samples run in crime labs across the country

Cons:
Very restrictive (even if for good reason)

Pros:
More flexible

Cons:
Must be built from scratch
Expensive and takes time
So how does it work?

**Illustrative examples of Rapid DNA in action:**

- Partnership between state lab and local law enforcement
- Law Enforcement volunteer program with private lab
- City law enforcement agency with county lab
Sample processing workflow today

- **Crime Scene**
  - Samples

- **State Database Lab**
  - SDIS profiles

- **DNA Section**
  - CODIS
  - Match Report

- **Traditional workflow**
  - Months (at worst)

- **Evidence Intake**
  - Samples

- **LEA**

- **LDIS Lab**

**ThermoFisher Scientific**

Weeks (at best), Months (at worst)
Partnership between State lab and local law enforcement

**Crime Scene**
- Samples

**State Database Lab**
- SDIS profiles

**DNA Section**
- RapidLINK (Data analysis and DB search)
- Traditional workflow
- RapidHIT used by LEO

**LEA**
- CSI determines what samples qualify for rapid and which do not

**LDIS Lab**
- Evidence Intake

**Within hours**
- Qualifying samples
- Non-qualifying samples
- Non-qualifying samples (second swab)
- Qualifying samples (second swab)
- Match Report

Monthly

Partnership between State lab and local law enforcement
Volunteer database program with private lab

- Volunteer Samples
  - High-priority Buccal swabs
  - Non-Qualifying Samples
  - Qualifying Samples #1
  - RapidHIT ID
    - Qualifying Samples #2
    - Matches
    - DNA Profiles
    - Private lab Database

- Traditional workflow
  - Buccal Swabs
  - Crime Scene Samples
  - DNA Profiles
  - Private lab Database
Plea Bargain program

- **Prosecutors office**
  - Lighter Plea Bargain (with DNA)
  - Tougher Plea Bargain (no DNA)

- **Crime lab**
  - Unknowns from routine casework

- **Crime Scene**
  - Samples
    - Non-Qualifying Samples
    - Qualifying Samples #2

- **Private lab**
  - Buccal Swabs

- **Traditional workflow**

- **Law Enforcement Agency**
  - DNA Profiles
  - Matches
  - Database
  - DNA Profiles

- **Private lab**
  - 200,000 Reference Profiles

- **RapidHIT**

ThermoFisher SCIENTIFIC
City PD with County Lab

- **Law Enforcement Agency**
  - Non-Qualifying Samples
  - Qualifying Samples #2
  - Reference Samples (Casework knowns or volunteer samples)
  - RapidHIT ID

- **Crime Scene**
  - Samples
  - Qualifying Samples #1

- **Traditional workflow**
  - DNA Profiles
  - LDIS Profiles

- **Crime Lab**
  - RapidLINK (LDIS profiles)
  - Matches

- **City PD with County Lab**
  - DNA Profiles
  - LDIS (CODIS)

- **Non-Qualifying Samples**
  - Qualifying Samples #2

- **References**
  - RapidHIT ID
  - LDIS Profiles
  - DNA Profiles
Myth or Fact?

- With a rapid DNA instrument, law enforcement no longer needs the lab.

- Myth
  - Building a database takes time and money.
  - Even with a private database many samples require analysis by a forensic DNA expert.
  - Why build a database when your local lab has years of data in their LDIS?
Myth or Fact?

• Any sample that can be sent to the lab can be run on rapid DNA instruments.

• Myth
  • Rapid DNA is getting better, but some samples (low-level and touch samples) are still best suited for the lab to test.
  • Patience!
- Myth or Fact?

- Myth
  - NDIS approval is required only for samples that will be uploaded to NDIS.

- NDIS approval is required to use rapid DNA instruments in a law enforcement environment.
Basic Contamination Prevention

Using agency approved procedures will ensure contamination free samples

- Follow evidence collection and preservation protocol
- Wear Gloves
- Wear masks
Double swab technique prevents sample consumption and allows for court confirmation

- Use two swabs at once
- Wet 2 sterile swabs with sterile molecular grade water
- Hold the swabs together and swab simultaneously
- Rotate the swabs as you swab, press firmly for 5-10 seconds
Sample Types

- Buccal swabs
- Blood sample
- Saliva samples
- Touch samples

The higher the amount of DNA the better the result

1. Buccal swabs
2. Blood sample
3. Saliva samples
4. Touch samples
Target 1 µL of Blood

Technique for accurate blood swab collection

- 0.5 µL
- 1.0 µL
- 2.0 µL
“We can now imagine a day when a suspect’s DNA is tested while in custody, making our communities safer and freeing valuable lab resources to focus on complex DNA tests such as rape kits.”

Natasha Alexenko
Victims’ rights advocate
Partnering to Help Make the World More Secure

Our HID team continues to provide leading-edge, innovative products across the human identification workflow. We remain dedicated to helping the forensics community develop more informative value in every case.

You will provide answers to the forensic questions of the future. We will answer to you with revolutionary innovations.

Empower your lab with rapid DNA lab. Contact:

**Name:** Dynamic field

**Email:**

**Phone:**
RapidLINK Apps Transform Results into Rapid Intelligence

**RapidLINK Match Application**
Matching is on all the time, so you know immediately when there’s a match.

**RapidLINK Staff Elimination Database Application**
Automatically detect contamination from staff and manufacturing employee profiles.

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**RapidLINK Kinship Application**
Verify family relationships from specific samples in your RapidLINK Software database.
Thank you
Unlocking a World of Rapid Intelligence

Partners in forensics, law enforcement, and public safety can benefit from Rapid DNA results in many applications

- **Investigative lead testing**: Generate investigative leads from DNA in real time that can help solve property crimes, auto theft, and other local crimes.
- **Decentralized databasing**: Generate hits while a suspect is still in custody.
- **Casework reference samples**: Maximize resource allocation between routine single source samples and more complex casework samples.
- **Disaster victim identification**: Implement a fast and easy field deployable solution for immediate identification.
Rapid DNA Technology Offers New Ways for the Law Enforcement Community to Work Together in the Effort to Solve Crime

In the forensic lab, personnel can process urgent samples more efficiently and enable those working in the lab who have limited forensic DNA experience.

In the police station, law enforcement personnel can generate investigative leads and identify suspects faster.

In the field, personnel can conduct rapid identification of disaster victims, reunite families, or support other field deployment needs.
Get answers when you need them most with Rapid DNA

Rapid DNA technology enables partnerships in forensics, from lab, law enforcement, and public safety to solve more crime.

The Applied Biosystems RapidHIT ID System enables law enforcement to use DNA information to steer investigations in real time. With minimal training, you can process DNA samples at the station or in the field—and, in only 90 minutes, obtain rapid intelligence that can immediately impact an investigation, or link suspects with past crimes while they are still in custody.
The RapidHIT ID Instrument Performs DNA Analysis With Minimal Hands-On Operation

The RapidHIT ID System compresses a standard DNA analysis workflow into an automated system.

All steps that the lab performs today are conducted inside the box.

1. Lyse sample
2. Amplify product
3. Transfer STR/ILS to electrophoresis
4. CE and detect
5. Analyze and upload results

Sample cartridge
Primary cartridge

Watch a video to see how easy it is to use the RapidHIT ID System at thermofisher.com/rapiddna
RapidHIT ID Cartridges Enable a Fully Automated Workflow

Self-contained cartridge technology transforms a multicomponent protocol into a single, user-initiated task

**Applied Biosystems™ RapidHIT™ ID Sample Cartridge**

- For buccal swabs, reference samples, or other high-quality evidence samples like blood, saliva, and sweat

**Applied Biosystems™ RapidHIT™ ID Primary Cartridge**

- Integrates all components required for lab processing
- One cartridge supports 150 reactions
- User is able to install and change
Rapid Intelligence Program Objectives

- Enable increased sensitivity on Applied Biosystems RapidHIT ID
- Intelligence criteria: Minimum of 6 full CODIS loci correctly called

Sensitivity Study
- Blood dilution series
- Saliva dilution series
- Challenge Samples
- Swabs of touched and worn items
- Cigarette butts
- Chewing gum

0.25 µL Blood

Correct CODIS Loci: 10
Matching Alleles: 41
Sensitivity, Blood on Swabs, ST=5000, Correct Alleles

Evaluate blood concentrations for:
- Concordant allele calls
- Flagging of allele calls
- Few instances of incorrect allele calls
- All incorrect allele calls (artifacts) were flagged
• All samples have flagged loci and would require analyst review.
• Average number of correct CODIS loci in this sample set is 6.
• Of 40 samples, 14 samples gave useful profiles.
  • In general, the saliva samples gave the best results - coffee cup, gum, mask, soda can.
  • Touch samples and blood samples generally returned <6 CODIS loci.
• 35% of runs are useful for comparison or search.

• Calling thresholds
  • 250 AT for all markers except D12 which has AT = 300
  • 55% PHR for all markers except D22 PHR = 60%
  • 5,000 ST to remove homozygotes.
Sensitivity, Saliva on Swabs, ST=5000, Correct Alleles
As DNA Databases Have Grown, Crime Has Decreased

>6.7M DNA profiles retained
65.6% Match rate crime to subject
2.0% Match rate subject to crime

Wednesday, July 19, 2017:
The RapidHIT system arrives in Panamá, is unboxed, set up, and local distributor staff are trained.

Thursday, July 20, 2017:
The system is introduced to Dr. Diomedes Trejos and his staff at IMELCF. That day, Dr. Trejos is swabbed, his sample is run on the RapidHIT system, and an excellent quality STR profile is generated; Dr. Trejos confirms the profile and expresses interest in installing a RapidHIT system in IMELCF’s mobile forensics lab.

Thursday, July 21, 2017:
Additionally, there were over 40 active Rapid DNA operators from 14 agencies statewide; each operator received 40 hours of training.
Arizona Department of Public Safety (DPS) implements a robust Rapid DNA program

“"The RapidHIT ID System is an instrument that takes three of the instruments that we use in the lab now and wraps them into one.”

“I predict in five to ten years you’re going to see more and more cases solved either the day that a crime occurs or shortly after.”

Vince Figarelli, Arizona DPS Crime Lab Superintendent

2014

Arizona DPS became the first Rapid DNA program to aid in investigations

June 2018

As of June, over 350 cases had been run through Arizona’s program, with over 100 investigative leads generated

June 2018

Additionally, there were over 40 active Rapid DNA operators from 14 agencies statewide; each operator received 40 hours of training
Richland County, South Carolina Sheriff’s Department is the first in the US to use the RapidHIT system to fight crime.

“The RapidHIT system allowed the investigator to focus on his suspect. But more importantly, it gets the criminal off the streets quickly, which prohibits them from committing additional crimes.”

Leon Lott, Richland County Sheriff

On the morning of Tuesday, July 29, 2014, a suspect in an armed robbery/attempted murder committed earlier that same morning was taken into custody after fleeing a routine traffic stop. The shooting victim from that morning had struggled with his assailant, so police ran a sample from the suspect’s clothing with the RapidHIT system and in less than 2 hours, identified a DNA match with the victim, providing evidence that helped lead to the suspect’s arrest.

The Orange County District Attorney’s (OCDA’s) Office in Southern California achieves impressive investigatory results using the Rapid DNA program.

**Case study**

**Carjacker**

Gary Munoz

- **March 9**: Suspect forced passenger out of an idling car, fled the scene, then abandoned the car two miles away; police submitted a used cigarette for forensic analysis.
- **March 15**: Investigators matched the sample to a DNA profile in the local database.
- **March 22**: Suspect arrested.
- **April 27**: Suspect arrested, charged, and convicted in less than two months. Gary Munoz, 30, plead guilty on April 27, 2017 to one count of felony carjacking.

Investigative Lead Testing

The Orange County District Attorney’s (OCDA’s) Office in Southern California achieves impressive investigatory results using the Rapid DNA program.

Rapid DNA provides leads from evidence enabling rapid successes

• One of the agency’s first successes came after a suspect in a car burglary left behind a cigarette butt. The crime occurred Nov. 30, and the evidence was delivered to the OCDA’s office two days later at around 8 a.m. By noon, the lab had informed the police department of a match with the DNA of an offender in the OC database. The suspect was arrested the same day. The suspect was arrested on Dec. 18 and pled guilty on Dec. 29.

• In 2016, a Del Taco™ fast-food restaurant was robbed in the city of Orange. Two men robbed the restaurant at knifepoint, making off with the tray in the cash register. But one of the suspects left behind a cigarette butt. Less than a week later, the OCDA DNA Unit got a hit on the DNA on the cigarette butt, which matched the DNA of the primary suspect, who was arrested and implicated himself in the crime.

“We’re now solving cases in a matter of hours. It’s unbelievable.”

Paul Carvo, Supervising Investigator, OCDA DNA Unit

Hardesty, Greg. “OCDA’s Rapid DNA team is a big hit for Garden Grove PD, other OC police agencies.”

Behind the Badge GGPD. March 24, 2017. behindthebadgeoc.com/cities/ggpd/ocdas
Investigative Lead Testing

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One of the OCDA’s partners, the Garden Grove Police Department, has submitted particularly good samples—the OCDA Rapid DNA team has been able to obtain searchable profiles 77% of the time and get hits on those profiles 48% of the time.

“People thought this would never be possible, but with the power of the local OCDA DNA database combined with the Rapid DNA program, we know we can do this. Now the challenge is to do this on a large scale to expand its potential to increase public safety.”

Jennifer Contini, Assistant District Attorney, OC

“We’re approaching the ‘CSI’ level. You watch a TV show and by the end of the episode, they’ve solved the crime; we’ve almost gotten that fast now. It’s crazy.”

Jody Hynds, Forensic Scientist, OCDA DNA Unit

Hardesty, Greg. “OCDA’s Rapid DNA team is a big hit for Garden Grove PD, other OC police agencies.” Behind the Badge GGPD. March 24, 2017. behindthebadgeoc.com/cities/ggpd/ocdas
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- What happens when you receive a single sample from an urgent, high-profile case?
- What if you have to run a confirmatory test on a CODIS match to meet a state requirement?

The Applied Biosystems™ RapidHIT™ ID System enables one-off sample runs for urgent cases.

The RapidHIT ID System makes it easy to process urgent samples quickly and without a batch.
RapidHIT technology enables on-the-spot mobile DNA analysis

The fast, portable, and easy-to-operate RapidHIT system can be deployed in mobile labs to empower law enforcement with tools for identifying criminals when time is of the essence.

Rapid DNA-equipped mobile labs can help in the field-identification of disaster victims by providing:

- Regular service to a larger geographic territory
- Access remote regions
- Initiation of on-site processing, so results may be available before arrival at the next scene
Pioneering use of the RapidHIT ID System in a mobile laboratory environment

The Korps landelijke politiediensten (KLPD) [National Police Services Corps]—the Dutch national crime unit charged with special investigations—launched a RapidHIT instrument-equipped mobile crime vehicle in 2012.

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DNA Helps Provide Justice for Victims of Sexual Assault

In the US, the rate of sexual assault and rape has **fallen 74% since 1993**

New initiatives, funding, and technologies are helping to **reduce the backlog of untested rape kits**
DNA Helps Exonerate the Innocent

>2,000

wrongfully convicted men and women in the US have been exonerated through DNA evidence

National Registry of Exonerations, Michigan State University College of Law. law.umich.edu/special/exoneration
The RapidHIT ID System Complements Traditional DNA-Based Forensics

Using the RapidHIT ID System for fast and easy DNA profiling can empower professional forensic scientists:

- With mobile Rapid DNA, analysis and interpretation remain in the lab with forensic scientists using RapidLINK Software.
- Rapid DNA requires less training, so less-skilled technicians can run routine samples, freeing budget for higher-value casework.
- Highly skilled and trained scientists have increased bandwidth to work on analysis and interpretation of more challenging casework instead of processing routine samples.
Innovations to Provide Answers at Every Stage of a Case

Our kits and systems are designed to get answers from the most challenging samples and to meet the most challenging demands

RapidHIT ID System
Applied Biosystems™ 3500 Genetic Analyzer
Ion S5™ System
Thank you