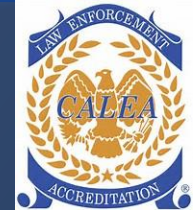


ThermoFisher
SCIENTIFIC



Law Enforcement & Rapid DNA Rapid DNA case study

Director Fred Harran
Detective Glenn Vandergrift

Bensalem Township Police Department
Bucks County, Pennsylvania



Disclaimer

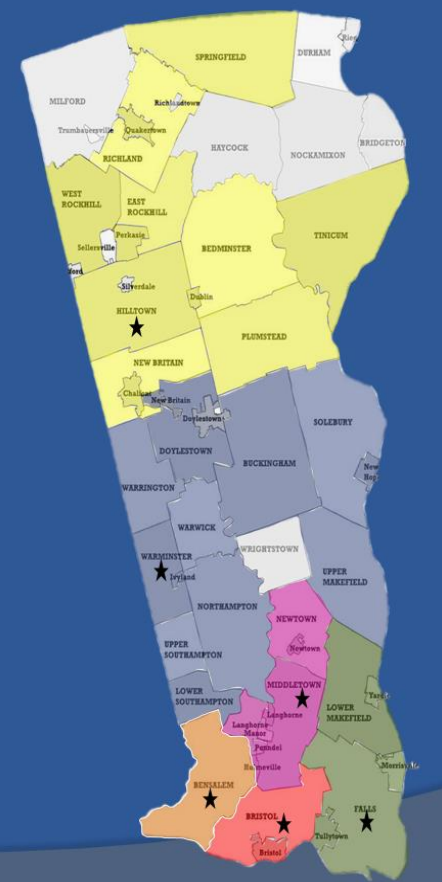
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ThermoFisher
SCIENTIFIC

Bucks County, Pennsylvania

- Population 626,000/1.4 Million
 - Suburban / Urban
 - Borders Philadelphia, Trenton & Allentown
 - 604 Square miles
 - 54 Municipalities in Bucks County
- 39 Departments
 - 800 sworn officers





Complement Services from Government Forensic Labs

**Government
DNA LABS**

**BodeHITS™
Local Agencies**



History of the Bensalem/Bucks Local DNA Database

- First presented with the concept in Fall of 09
 - Were previously unaware of the potential for use of DNA in property crimes
 - Unaware of the ability to create a local database
 - Visited Florida Police Departments
 - Had implemented a local database 3 years previously
- Bensalem Police Department database 2010
- 16 Bucks County Departments 2014
- Bucks County (39 PD's) June 1, 2015
- March 2017 On Line with **RAPID**



Focus of Program

- All sworn personnel trained in processing scenes for DNA with emphasis on narcotics and property crimes
- Adoption of new philosophy using DNA as an investigative tool
- Officers & Investigators play the biggest roles in collections
- 20 Detectives and Supervisors Trained in RAPID



“BLIND HIT”

- Cases being BLIND HITS where no other investigative leads available
- At the time of the crime being reported zero solvability
- Case remained “active UCR” with no follow-up
- Only factor leading to arrest or closure was DNA



First Hit

- A constructive possession case where a glassine baggie containing approximately 30 vials of crack was discovered in the rear of the transport van. Five suspects were being Transported to HQ and it was unknown who discarded the baggie of crack. The DNA of actor was matched to the DNA swabbed from the exterior of the baggie.



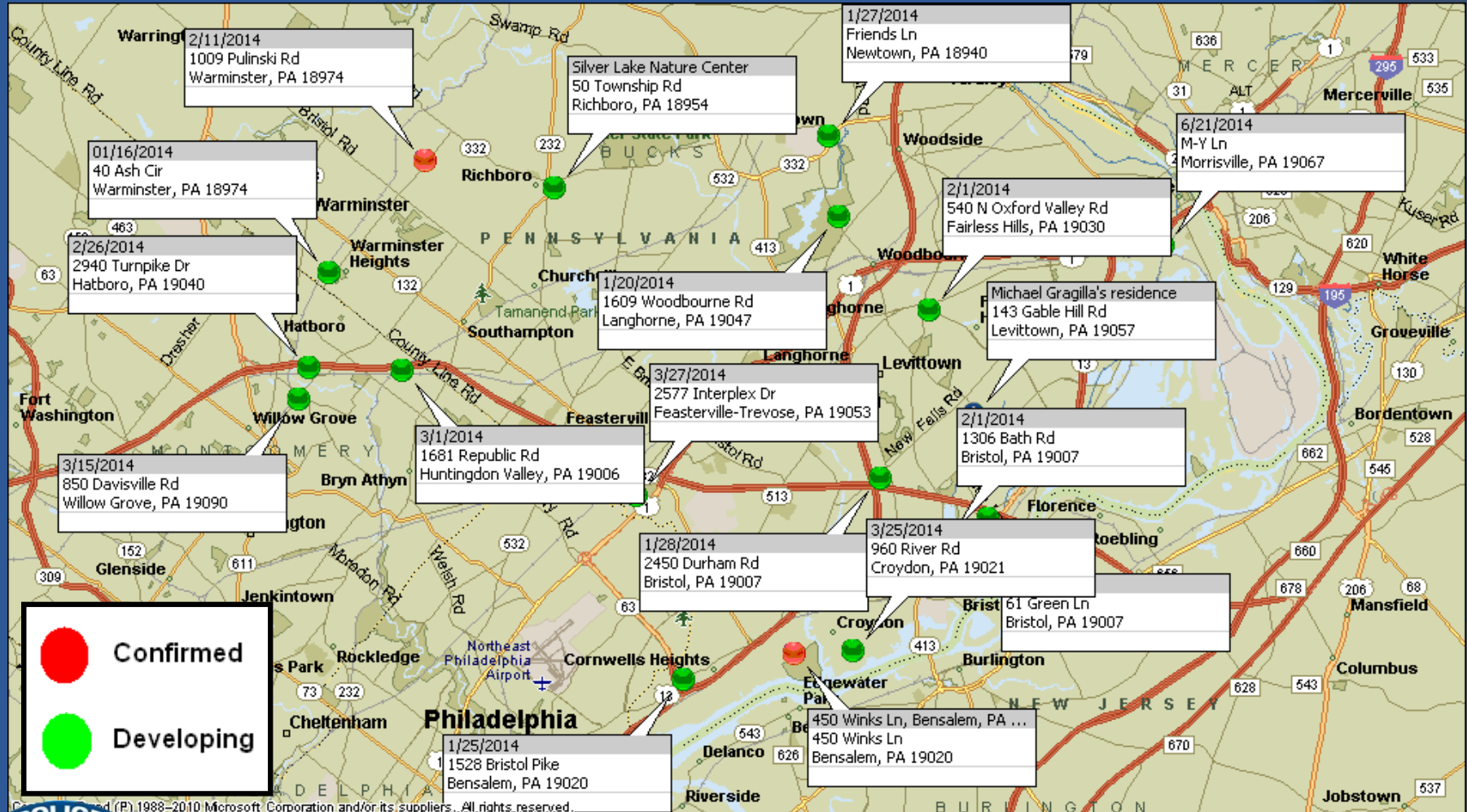
PECO Theft Map: Developing Links



“Since January 2014, PECO technicians have responded to several customer power outages in the Bucks County area. PECO technicians discovered PECO-owned transformers were accessed and damage caused to the secondary underground cables.” – PaCIC, March 12, 2014



PECO Theft Map: Developing Links



*Confirmed location in Springfield, PA not shown above

DNA Link

**January 2, 2014:
450 Winks Lane,
Bensalem, PA 19020**

Plastic water bottle left at scene was processed for DNA and a full male profile came back (14-00097)



**February 11, 2014:
Ivyland, PA
(Northampton Patrol)**

DNA from volt meter matched the profile from the water bottle recovered (14-00097)

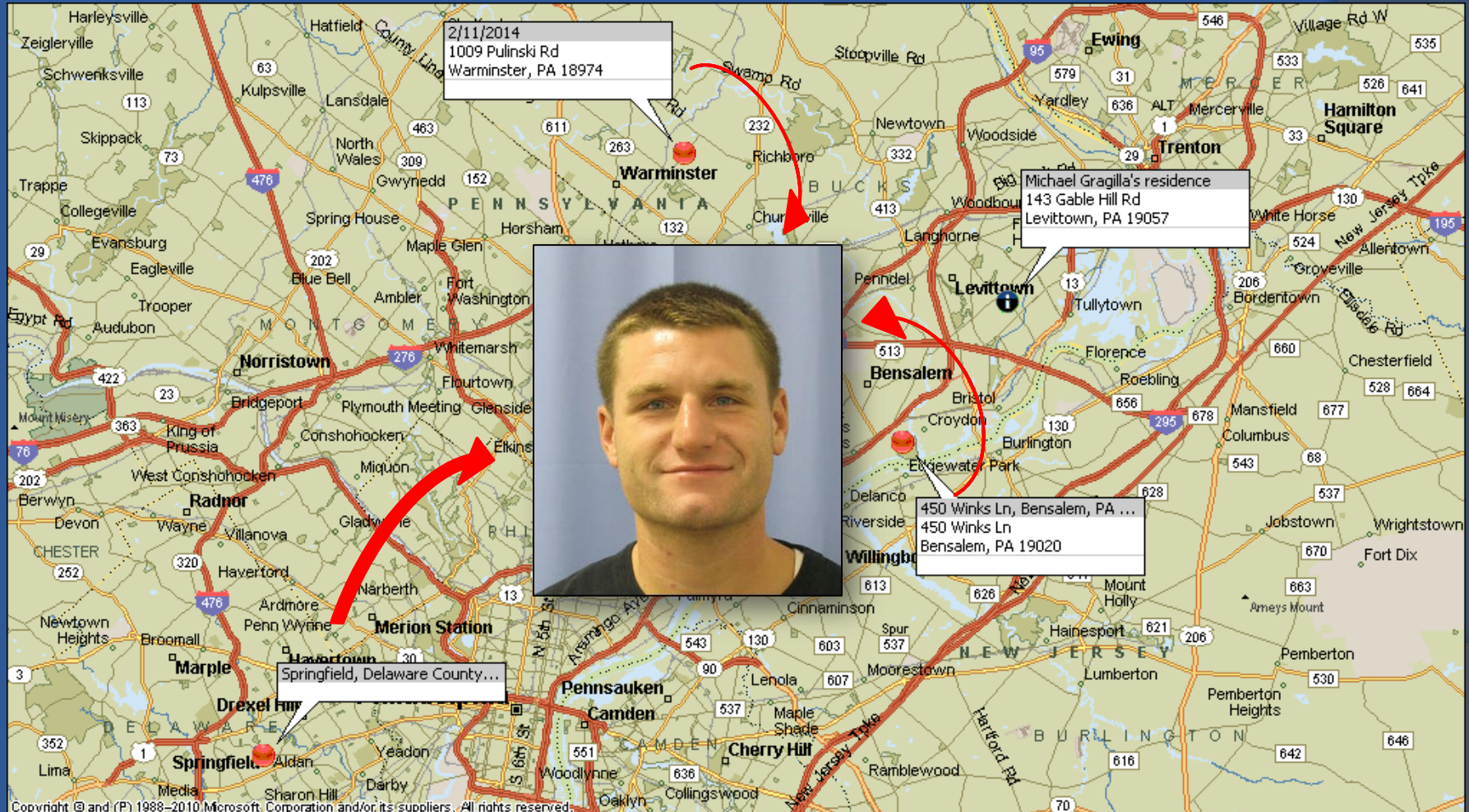


**March 25, 2014:
Springfield, Delaware
County, PA**

DNA from gloves and hardhat matched the volt meter from (14-07199) and the water bottle from (14-00097)

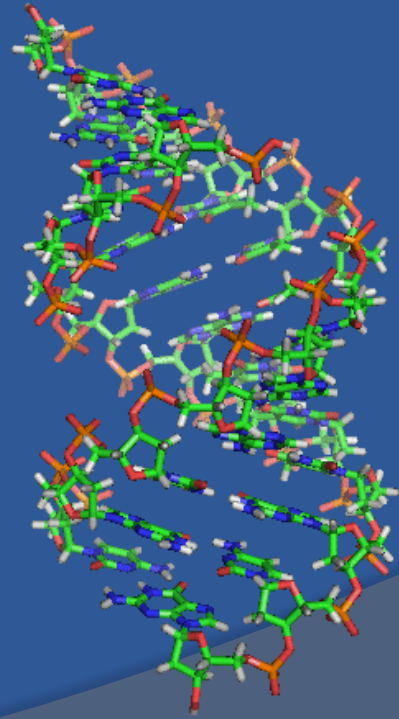


DNA Linking suspect to incident



Collection Protocols

- Suspect Collections with **Consent**
 - DA's office approved
- Evidence Collections
- Evidence Triage



Individual Consent Waiver

I, _____, freely and voluntarily consent to provide a DNA swab sample to only be used for the purpose of criminal investigations. I have been advised that I have a right to refuse permission to obtain the sample at any time. ***I have also been advised that if I provide a sample, I may have it removed from the database upon my request.*** If I do refuse, I know the Officer may apply for a search warrant or court order prior to obtaining the samples. I know that any evidence seized may be used against me in a criminal prosecution.



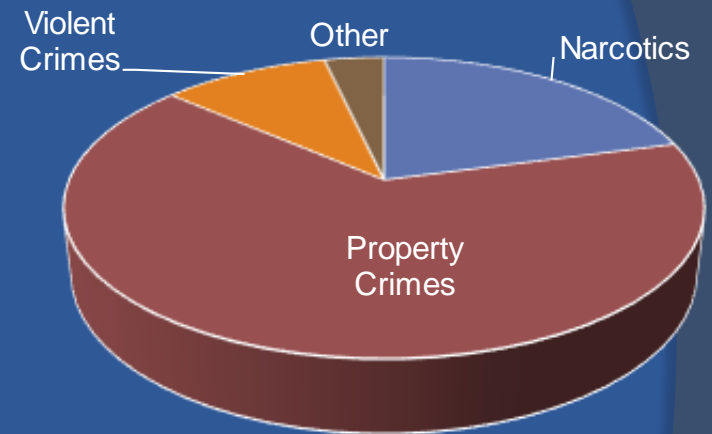
Program Statistics After Nine Years

- Total number of reference and evidence profiles in database
 - Approximately 26,000+
 - 12,500+ reference profiles
 - 13,500+ evidence profiles
 - 2100+ plus Hits
 - COUNTY 3000 profiles
 - **700 Cross Agency Hits**
 - **Rapid 60 leads**
- Results have played a role in over 950 criminal investigations to date



Breakdown of 950+ Investigations Involvin DNA Hits

- Narcotics
- Property Crimes
- Violent Crimes
- Other



- Cases involved handguns where DNA was obtained from the gun and matched the suspect.



Crime Trends: Burglaries After Local DataBase (LDB)

- Bensalem Township

↓ 42%

- Bucks County:

↓ 14%

National Average:

↓ 4.5%



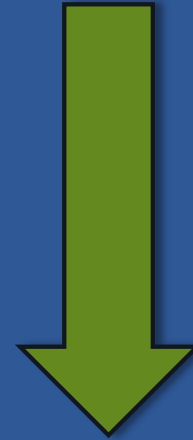
Crimes Continues to Decrease 2016

- Burglary 65%
- Robbery 51%
- Auto Theft 46%



Crimes Continues to Decrease 2018

- Burglary 26%
- Robbery 14%
- Theft 16%
- Forcible Rape 55%
- Total Part 1 Crimes 16%



Crimes Continues to Decrease 2015-2016 Burglary

- Bucks County 25% Decrease
- Surrounding Counties Increase



National Average Clearance Comparison

Crimes	Bensalem 2018		National 2017
Violent Crimes	57%	▲	45.60%
Property Crimes	37%	▲	17.6%
Burglary	17%	▲	13.5%
Robbery	43%	▲	29.7%

Case Example # 1

Possession with Intent to Deliver

- Investigation into the sale of prescription pills at local motel
- Numerous items relating to the sale and distribution of narcotics and prescription pills
- DNA swabs of pill bottles and packaging
- DNA swabs match the DNA of the suspected dealer



Case Example # 2

Residential Burglaries Closed by Arrest

- Two residential burglaries committed with same M.O. (forced window)
- Burglaries were over a month apart
- DNA was collected from a discarded cigarette at one scene and the rock used to smash the window on the other
- DNA obtained from the items was a match to the suspect
- Suspect admitted to **opioid addiction**



Case Example # 3

Arrest and Seizure of 12 Kilograms of Cocaine

- Officers conduct a traffic stop in area of Lincoln Hwy
- During consent search Officer discover a hidden compartment
- Occupants denied knowledge of compartment and provided DNA
- Search of compartment revealed 12 kilograms of cocaine
- DNA from one of the kilograms matched the driver



Case Example # 4

Major Vehicle Theft Investigation

- Multijurisdictional thefts of work vans and tools
- Over 30 vans stolen in nine month period
- Suspect arrested and DNA provided matched DNA from some of the recovered vehicles
- \$500,000 worth of recovered stolen tools recovered
- Suspect admitted to **opioid addiction**

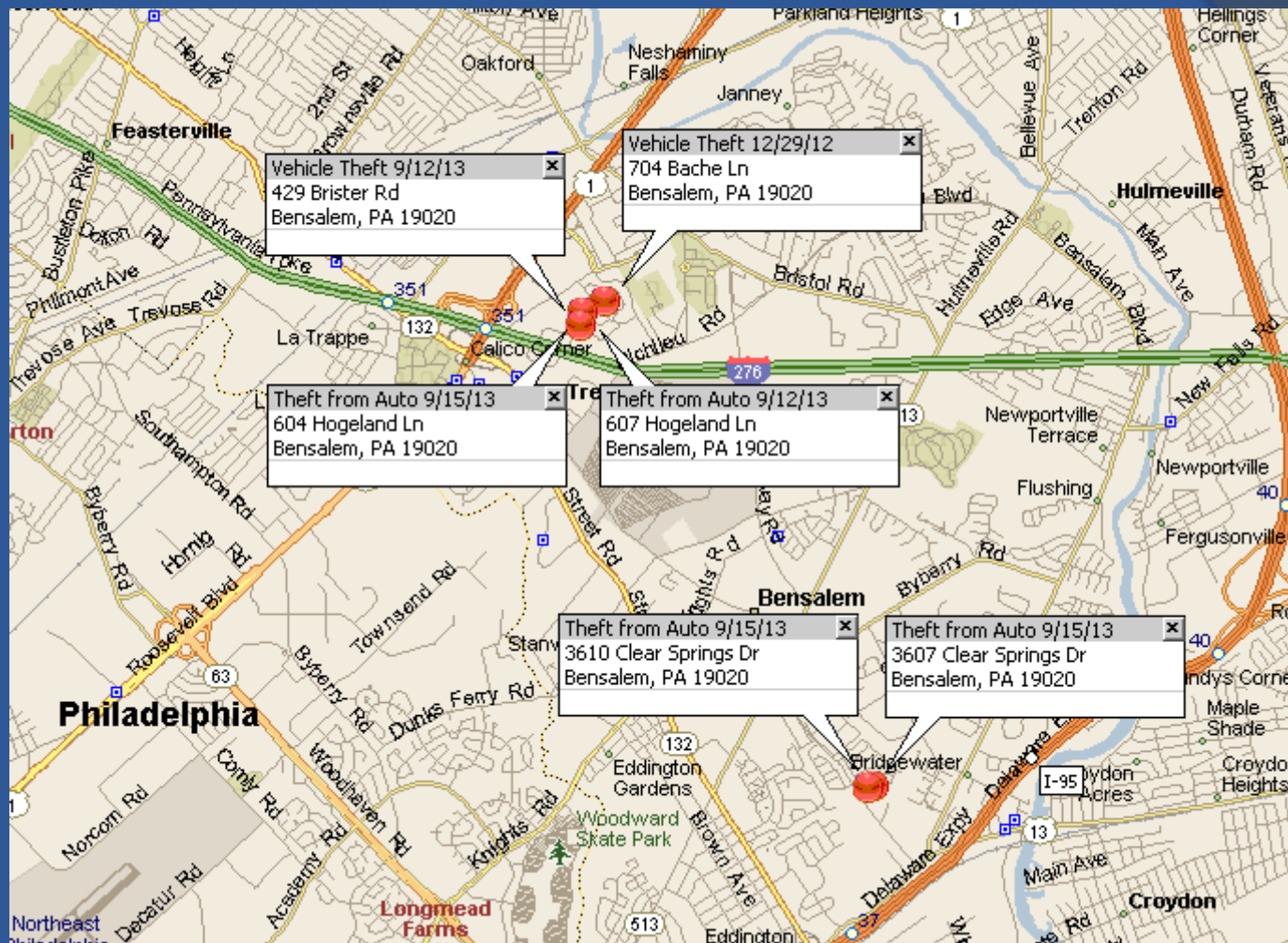


Case Example # 5

Multijurisdictional Burglary Investigation

- 13 commercial burglaries of pizza shops
- Blood collected from multiple scenes
- Surveillance photograph of female actor
- Female arrested exiting pizza shop burglary
- Suspect arrested previous month and provided DNA
- Suspect's DNA matched the DNA collected from multiple scenes which lead to a full confession
- Suspect admitted to **opioid addiction**





Multiple BLIND HITS which lead to the CLEARANCE OF 18 CASES TOTAL - This investigation involved multiple theft from vehicles and a vehicle theft. Detectives obtained DNA from a suspect with a **search warrant** once he was developed as a person of interest in one of the cases. Once the suspect's DNA was entered into the DNA database, multiple DNA matches were made to ten active investigations. DNA was recovered from vehicles and discarded items.



RAPID DNA

ThermoFisher
SCIENTIFIC



Rapid DNA

- 90 Minute
- Search 3 Minutes
- Criminals OFF the Street

NOW



Process

Buccal
Swab

90 min
Process
Rapid

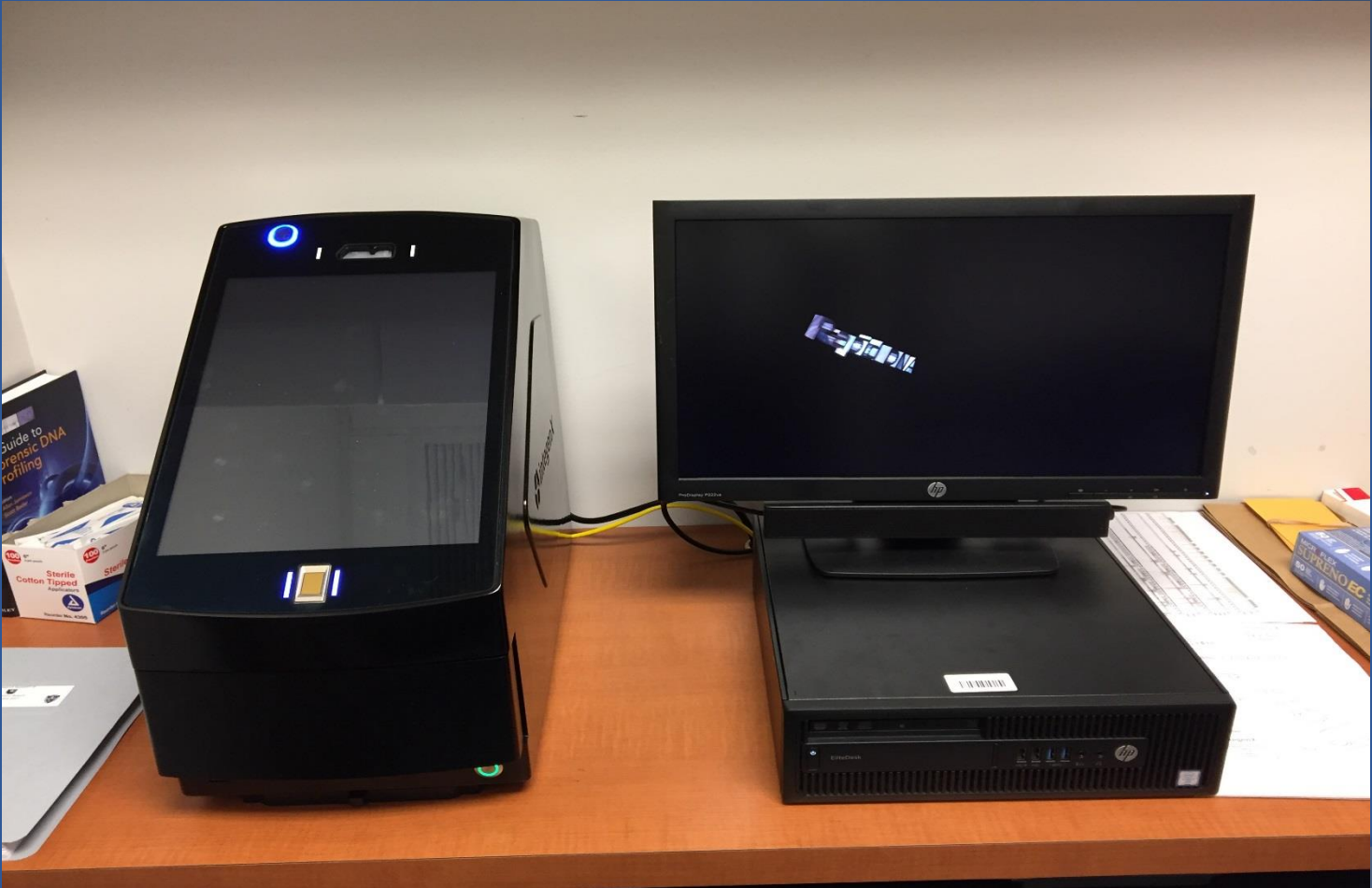
Xml. file up
loaded to
Data Base



LE and Lab working together

- ⦿ Validation (Reference 50 and Blood 25)
- ⦿ Training
- ⦿ Documentation





RAPID

- Cheeks Swabs
- Blood
- Saliva
- Cigarette Butts
- Chewing Gum



- The priority for sample collection and RapidDNA use is that we must have enough of a sample to send to the lab for processing first. If we have a sufficient sample for the lab and we have “left over” sample, then we consider the use of that “left over” sample in the RapidDNA Instrument. If there is a DNA HIT on the excess sample in the RapidDNA Instrument, the other part of the sample is sent to the lab for confirmatory testing via the regular lab process.

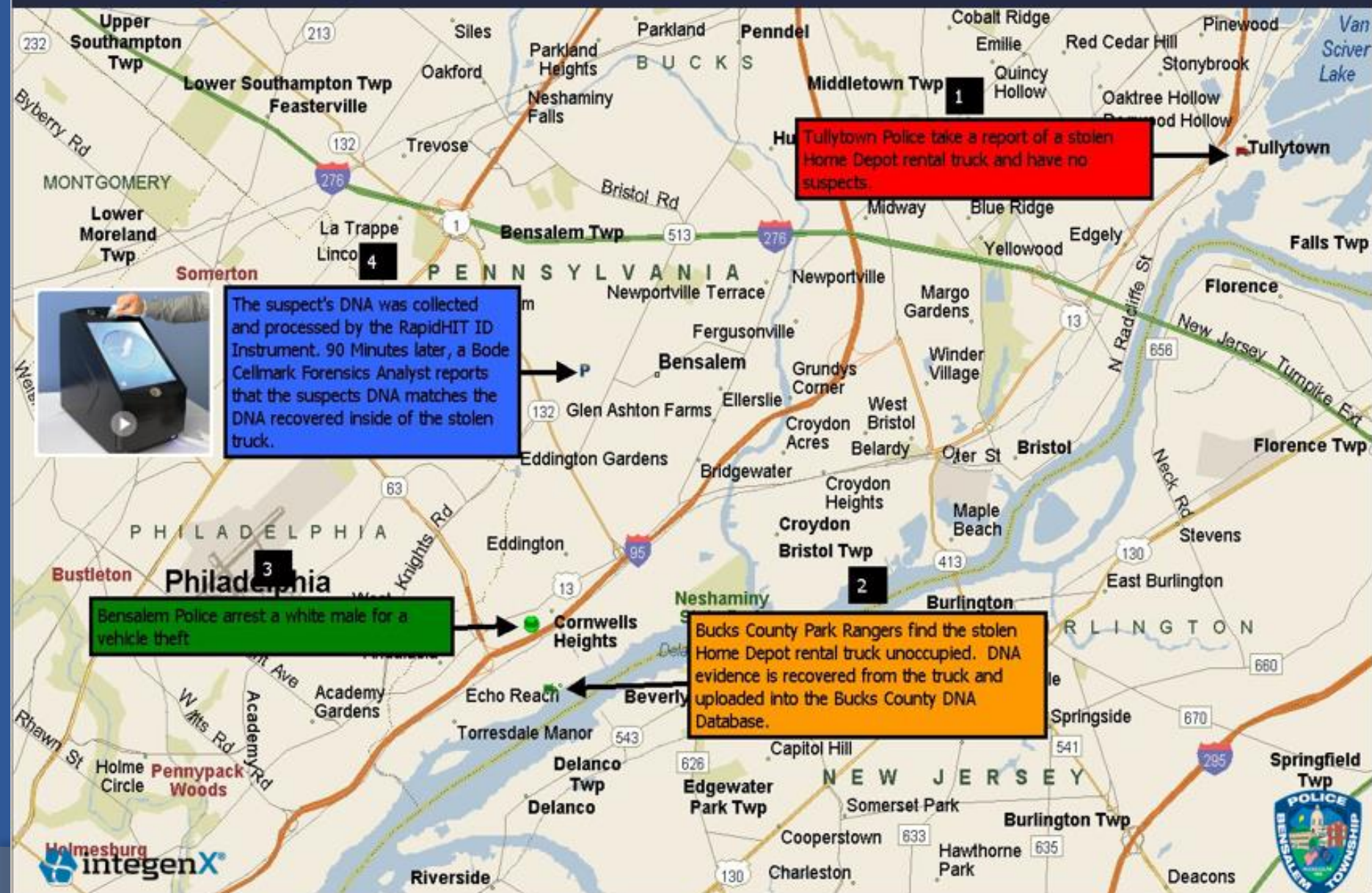


- We have NEVER had a DNA profile from the RapidDNA Instrument differ from the DNA profile obtained by the lab during confirmatory testing.





THE BUCKS COUNTY DNA DATABASE





RapidHIT ID Cross-Agency DNA HIT Bucks County DNA Database

December 11, 2017 - Middletown Police Take a Report of a Retail Theft at the Giant Food Store, 168 N Flowers Mill Road, Langhorne PA 19047

MTPD collects DNA from the handle of a plastic shopping bag left behind by the actor when he fled. The DNA swab is submitted to Bode Cellmark for processing and entry into the Bucks County DNA Database.

May 19, 2017 - Bensalem Police arrest David Frascella for an in-progress retail theft at the Giant Food Store, 2721 Street Road, Bensalem PA 19020.

His DNA is collected and processed in 90 minutes using the integenX RapidHIT instrument and immediately uploaded into the Bucks County DNA Database for comparison.

In 2 minutes, an email notifies Bensalem PD that the DNA of David Frascella matches the DNA recovered from the retail theft in Middletown on December 11, 2016. MTPD is automatically notified of this DNA HIT.



RAPID

- Reference sample of Rape suspect EXCLUDED as profile on coffee cup and semen from victim...Charges withdrawn.
- Reference sample of 2 Suspects also EXCLUDED them as possible actors.



RAPID

- Reference sample of Burglary/Vehicle theft suspect, HIT to crack pipe in vehicle and blood on window entry point of home
- Reference sample of vehicle theft suspect, HIT to beer can and steering wheel of stolen vehicle.
- Reference sample of vehicle theft suspect, HIT to steering wheel of stolen vehicle.
- Reference sample of robbery suspect, HIT to DNA recovered from a gun used by the actor



RAPID

- Reference sample of suspect of (2) vehicle thefts, HIT to cigarette butts, wire cutters gatorade bottle, mountain dew bottle, gear shift and steering wheel of stolen vehicles(Tullytown and Bensalem PD)



1. – Vehicle Theft – (RAPID HIT) - A
vehicle was stolen from the Bensalem.
The vehicle was recovered unoccupied
and processed for DNA by Ofc. A
suspect was developed by Det. We
obtained a search warrant for his DNA
and it was entered into the
ThermoFisher RapidHit Instrument.
Suspect's DNA hit the swabs that Ofc.
Took from the stolen vehicle. Charges
were filed in this case.

1. Robbery/Multi-Vehicle Theft Investigation

- (**RAPID HIT**) From December 2016 through May 2017, Bensalem suffered an influx of vehicle thefts and in May 2016, an elderly victim was robbed of her car at knife point. A suspect was developed and Det. obtained a search warrant for his DNA. His DNA was entered into the ThermoFisher RapidHit Instrument resulting in numerous DNA hits from the vehicle thefts and Robbery items that were swabbed. Suspect was arrested and confessed to (6) stolen vehicles and the armed robbery.

Burglary

- A school was burglarized and entry was made through the roof
- Two cinderblocks and a skylight were processed for DNA
- The DNA collected from the evidence was sent to BODE and a full male profile was developed



Burglary

- ⦿ During the same timeframe there were an additional eight rooftop burglaries in Northeast Phila
- ⦿ Philadelphia Police arrested a suspect and charged him with one of their burglaries.
- ⦿ The suspect was released on bail but provided a sample of his DNA prior to being released

Burglary

- The suspect's DNA sample was analyzed through the Bensalem Police Rapid DNA instrument and his DNA profile matched three pieces of evidence from the rooftop burglary of the school
- When confronted with the DNA evidence, the suspect confessed ALL five rooftop burglaries in Bensalem

July 5-13, 2017

◉ Quadruple Homicide



2017 Quadruple Homicide

Bucks County – Quadruple Homicide

- July 5th to 7th – Four young men go missing in Bucks County near Philadelphia, PA
- July 12th – BCF is contacted to test bloodstains found on a backhoe and in a barn on farm belonging to parents of suspect, Cosmo DiNardo (1 day rush) – The bloodstains originated from two of the victims
- July 13th – Human remains found on farm in 12.5' grave
- July 13th – DiNardo confessed to killing the four men with an accomplice, Sean Kratz.



RAPID

- Buccal swab of homicide victim found in mass grave processed and matched to the exemplar toothbrush of victim Thomas Meo.
- Blood from floor of barn matched exemplar toothbrush of victim Dean Finnichiario.



Sara Colvin



No more addiction, no more crime





NAME: CHRISTOPHER SHAMIR ELDRIDGE
DATE OF BIRTH: 12/16/1983

09/23/2006

Subject, Christopher Eldridge, is arrested and convicted of carrying a firearm w/o a license in Phila.; DNA obtained and put on file with CODIS.



06/12/2011

Rape is reported in Atlantic City, NJ. Rape Kit is completed

06/15/2011

Rape Kit submitted to NJ State Lab.

11/08/2011

CODIS hit from Rape Kit to subject, Christopher Eldridge. Victim does not return calls or correspondence from assigned detective and case stalls. The assigned detective subsequently retires before the victim is located and Eldridge can be arrested

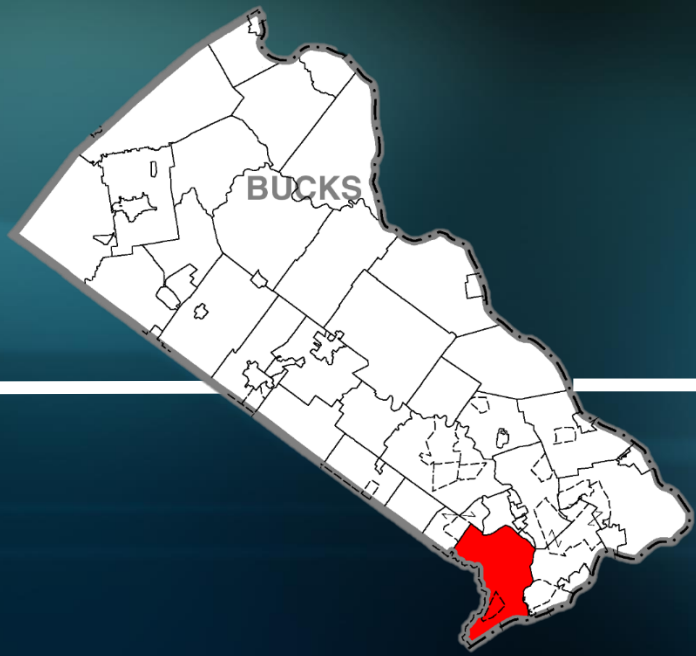
An aerial, black and white photograph of a city, likely Philadelphia, with a large domed building (Independence Hall) visible in the lower-left foreground. The city is spread out across a valley with hills in the background.

05/13/2015

Atlantic City, NJ case is reopened after contact is made with the victim. The victim was unsure if she wanted to proceed with the case since so much time has passed. The newly assigned detective responds to Bensalem seeking a consensual DNA sample from Eldridge.

06/16/2015

Atlantic City, NJ Detective is advised by the victim that she does not wish to pursue the case.



10/03/2015

Rape is reported in Bensalem, PA. Rape kit is completed; sent to the State Lab; Additional DNA evidence sent to Bode.

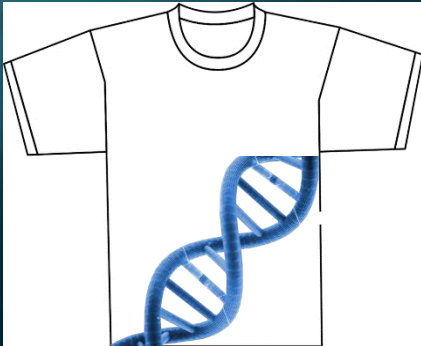
10/07/2015



Subject, Christopher Eldridge, is developed as a suspect and charged with Rape for Bensalem Incident.

10/21/2015

Bensalem Township PD received results from Bode Cellmark Forensics linking the defendant and victim's DNA to significant items related to the crime scene; specifically:



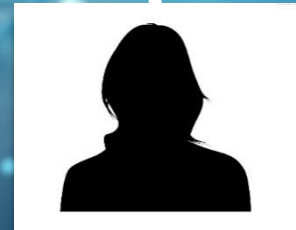
A stain on the victim's shirt tested positive for semen which matched the suspect Eldridge.



Christopher Eldridge



DNA swabs of handcuffs that were recovered from suspect Eldridge's residence matched the rape victim.





NAME: CHRISTOPHER SHAMIR ELDRIDGE

DATE OF BIRTH: 12/16/1983

09/23/2006

DNA obtained and put on file with CODIS

06/15/2011

Rape Kit submitted to NJ State Lab

05/13/2015

Atlantic City, NJ cases reopened

10/21/2015

BODE HIT

06/12/2011

Rape is reported in Atlantic City, NJ.

11/08/2011

CODIS hit from Rape Kit to subject

10/03/2015

Rape is reported in Bensalem, PA

4/7/2016

PSP Results

William Bratton

“Knowing your assailant will be caught is a lot less comforting to a citizen than the confidence they won’t be attacked in the first place”

