

# A Multidisciplinary Approach to Cold Cases

Ohio Bureau of Criminal Investigation



**DAVE YOST**  
OHIO ATTORNEY GENERAL





# Ohio Bureau of Criminal Investigation

The Bureau of Criminal Investigation may investigate any criminal activity in Ohio when requested by local authorities.

## Main Divisions:

- Identification
- Laboratory
- Investigations
- Administration
- OHLEG



# Ohio Attorney General

## History of Support for Cold Case Investigations

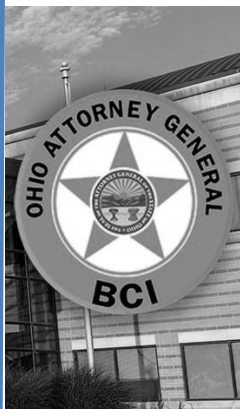


BCI assists with cold cases through the Special Investigations Unit



### 2010

BCI establishes a Cold Case Initiative to provide training and resources to law enforcement



### 2011

Attorney General DeWine launches the Sexual Assault Kit (SAK) Testing Initiative



### 2012

Ohio BCI launches the statewide Unsolved Homicides website



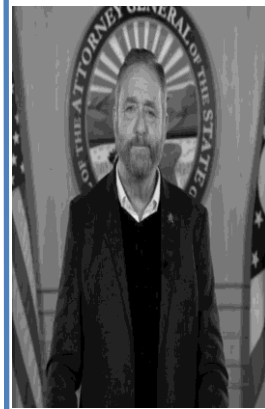
### 2016

Ohio BCI uses familial DNA testing for the first time



### 2020

Attorney General Yost launches BCI's dedicated Cold Case Unit as a multidisciplinary team



# Ohio BCI: Cold Case Unit

The unit taps BCI's proven investigative resources, including state-of-the-art criminal intelligence gathering, laboratory work and forensic analysis. The unit partners with the local law enforcement departments where cases originated to enhance their investigations.



# Cold Case Definitions

## Cold Case:

A cold case involves any investigation that remains unsolved after being reported to law enforcement and after all significant and viable leads have been exhausted and includes the following: an unsolved homicide investigation; a questioned death investigation (in which the cause of death is undetermined but is suspected to be homicide); a suspicious missing person case (where the victim is suspected to be the victim of a homicide); or an unidentified remains investigation.


## Cold Case Sexual Assault or Cold Case Sexual Assault Kit Investigation (SAKI):

A cold case sexual assault case involves any unsolved crime or attempted crime of a sexual nature with no apparent investigative strategies and includes one or both of the following:

- Any cold case sexual assault or homicide that has potential physical evidence which is suitable for laboratory analysis or advanced DNA technologies.
- Any cold case sexual assault or homicide where a sexual kit was collected as part of the investigation

# Cold Case Unit Methodology

The standardized methodology involves an initial assessment of the case file followed by an interactive case and evidence review where internal and external personnel review all physical evidence and formulate investigative strategies as a group with a team-oriented mission.


 Texas Department of Criminal Justice  
 Division of Forensic Sciences  
 Forensic Laboratory  
 1000 West 11th Street  
 Austin, Texas 78701  
 (512) 463-1000  
 www.tdcj.texas.gov

**Case File Information**  
 Case No.: [ ]  
 Date Received: [ ]  
 Referring Agency: [ ]  
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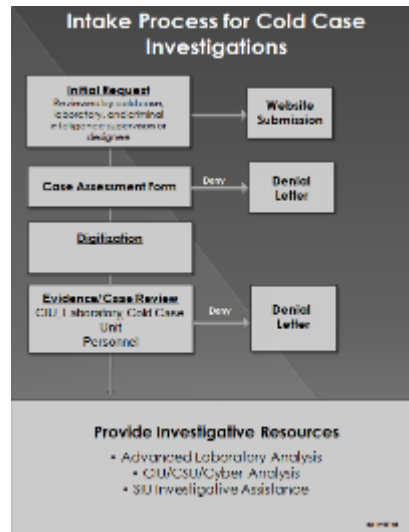
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**Cold Case Initial Assessment Checklist**

CASE NUMBER: [ ]  
 REFERRING AGENCY: [ ]

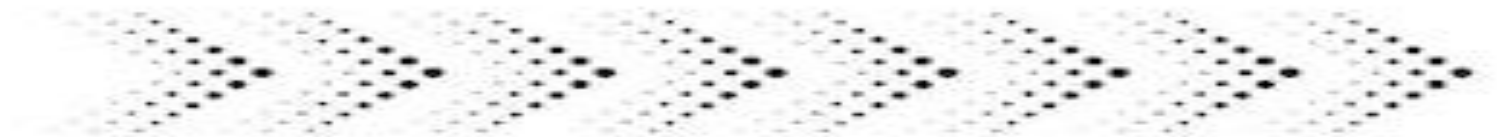
**Instructions:**  
 All entries must be marked. If marked "No", describe the reason under  
 "Comments".

Case File Assessment	Yes	No	Comments
Does a complete original investigative file exist?	<input type="checkbox"/>	<input type="checkbox"/>	
Was the case file classified as a homicide, sexual assault, missing person, or unidentified remains?	<input type="checkbox"/>	<input type="checkbox"/>	
If a homicide or missing person investigation, was the victim's body recovered?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there some photographs available for the case file?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there physical evidence for the case and has it been located?	<input type="checkbox"/>	<input type="checkbox"/>	
Was an autopsy performed and to there an autopsy report and file? What is the cause and manner of death?	<input type="checkbox"/>	<input type="checkbox"/>	
Has any investigative search occurred within the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	
Were any other local, state, or federal agencies involved in the investigation?	<input type="checkbox"/>	<input type="checkbox"/>	
Does this case have any media coverage or attention?	<input type="checkbox"/>	<input type="checkbox"/>	
Were any judicial or legal proceedings initiated in this case? Arrest? Grand Jury? Consumer's request?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the case have forensic requests?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the case have potential support? Please specify source:	<input type="checkbox"/>	<input type="checkbox"/>	
Have all current and viable leads and investigative activity been exhausted?	<input type="checkbox"/>	<input type="checkbox"/>	

# Multidisciplinary Methodology

BCI Cold Case Unit  
Special Agents

BCI Laboratory  
Forensic Scientists



Original Case File  
and Local  
Investigators

BCI Criminal  
Intelligence Analysts

Comprehensive Case  
and Evidence Review

# Multidisciplinary Methodology

- Modern cold case work depends on integrated forensic and analytical collaboration.
- The multidisciplinary approach brings together crime scene experts, laboratory scientists, investigators, analysts, and other specialized units so that no avenue is missed.
- The team-based model ensures that decisions are made collaboratively and that no overlooked lead remains dormant simply because a single discipline did not value or detect it.



## **Cold Case Review Objectives**

Goal of an unsolved homicide or unsolved sexual assault review is the arrest and successful prosecution of suspect and the preservation of an accurate and complete case file for posterity.

## **Cold Case Review Objectives**

- All available physical evidence is legally obtained and reviewed for laboratory analysis.
- All witnesses, suspects, and individuals are effectively identified, interviewed or interrogated.
- All leads are thoroughly developed and investigated.
- All details of the case are accurately, completely, and thoroughly recorded and reported

# Laboratory Services for Cold Case Investigations

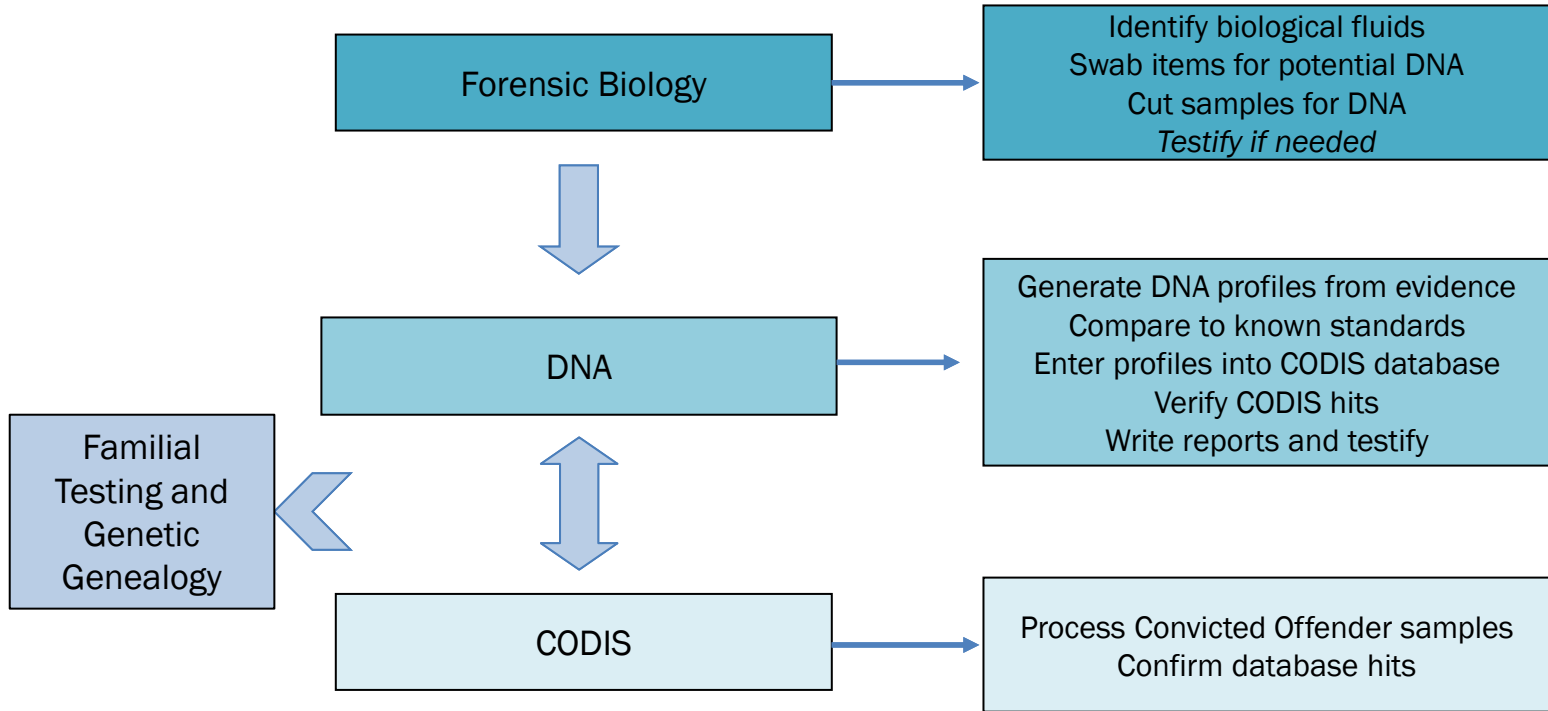
- Accredited by ANAB
  - Drug Chemistry
  - Latent Prints
  - Questioned Documents
  - Firearms
  - Gunshot Residue
  - Forensic Biology/DNA



# Who wants crayons?



# Laboratory Testing



# DNA Workflow



- Case notes
- Body fluid screening
- Collect samples for DNA testing

- Batch samples
- Automated and manual pathways

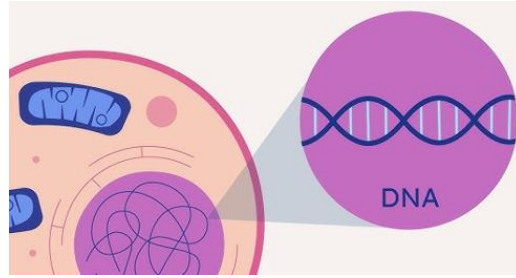
- Operate robotic instruments to generate DNA profiles
  - Evidence
  - Reference

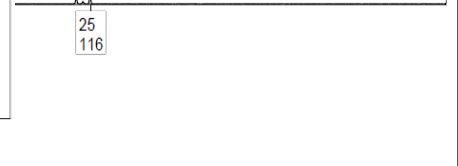
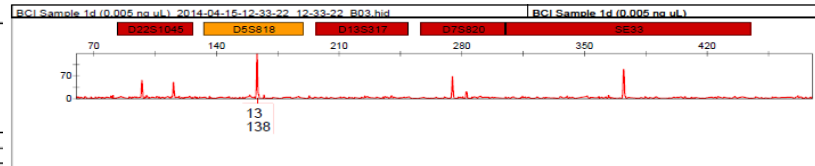
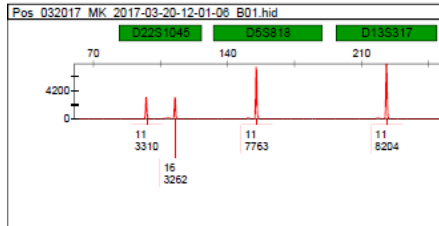
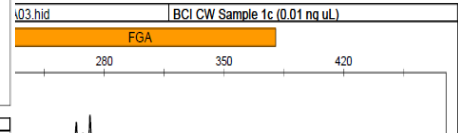
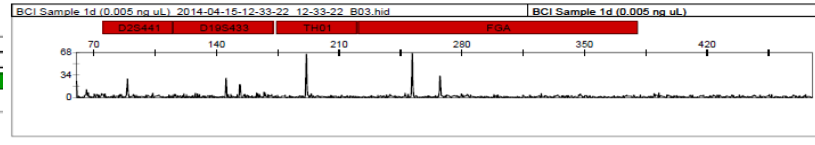
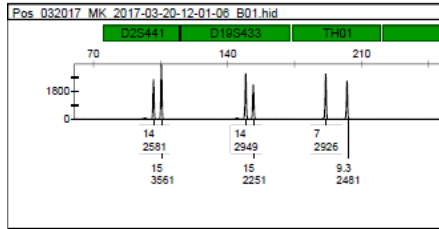
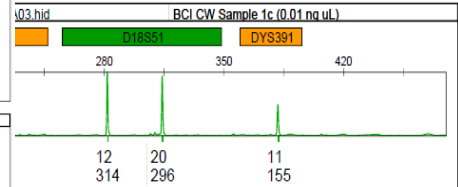
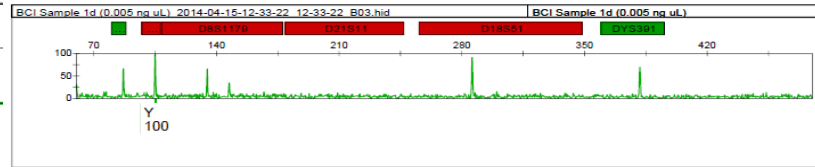
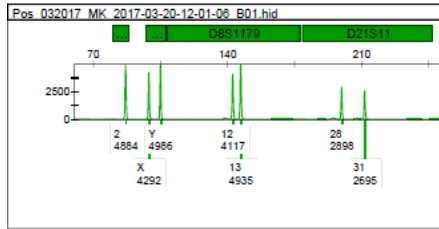
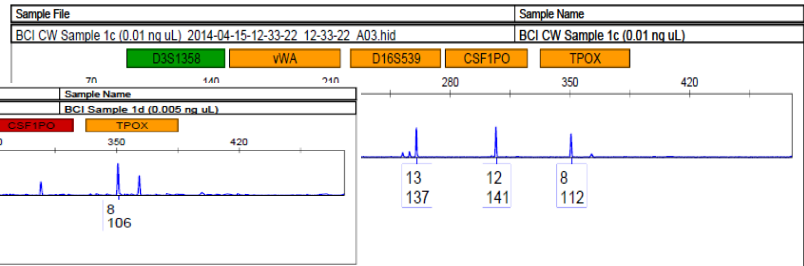
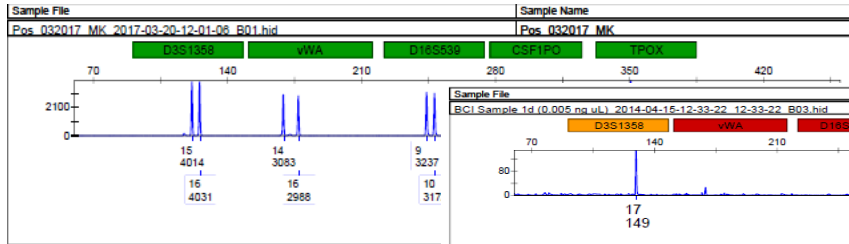
- Interpret data
- Write reports
- Identify re-works and/or advanced testing
- CODIS entry

- Independent qualified scientists
- Admin review (supervisor)

# Generating a DNA Profile

- 4 Basic Steps:
  - Extraction
  - Quantitation
  - Amplification
  - Detection





# Special Considerations

Storage conditions matter

- Lost evidence

Previous testing by other labs

- Review all reports
- What is left
- Other lab sections involved
- Sterile vs non-sterile
- Sample type and source

New testing capabilities

Updated collection techniques



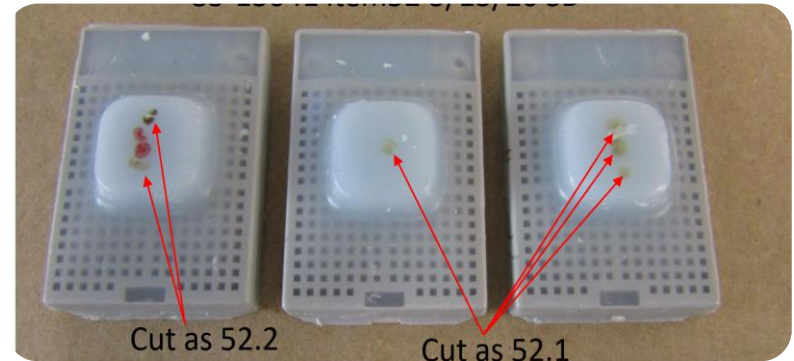
# Special Considerations

Is there enough DNA? Is it eligible for CODIS?

- Has lab made comparisons to all POI and suspects?
- Suspect or POI in CODIS database?

Deceased suspects

- DNA from relatives
- Biopsy samples



# Differences for Cold Cases

Broader approach to collection

May try DNA testing again or may not

Re-sampling/Re-submission

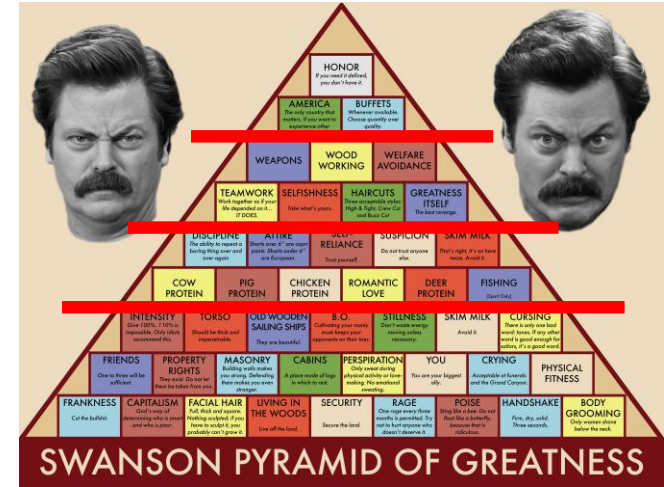
- What makes sense
- Comprehensive review
- Alternative methods



# What is the Goal?

## Case dependent

- Compare to standards
- Develop investigative leads
- Compare existing profiles
- CODIS!
- Obtain more DNA
  - Advanced DNA testing



Ultimate goal: make the best decisions for the case and the evidence as a TEAM

# What is CODIS?

Database with reference and evidence samples

- Rules for participating laboratories, profile eligibility, etc.

Victims and consent partners DO NOT go in

Samples “in the database” CANNOT be used in final DNA report

# Offender Collections in Ohio



1996

Convicted  
offenders of  
specific violent  
crimes

May 2005

HB525  
Convicted offenders  
of any Ohio felony  
Adjudicated juveniles  
of felony crimes

July 2011

SB77  
Adult arrestees  
of Ohio felony

# Advanced DNA Testing

## Kinship

### Work performed at BCI

- STR and (maybe) Y-STR profiles

### Compare standards to evidence profile

- First degree relative(s) of the donor of the evidence profile

### Cost

- Lab expenses
- No cost to LE

### Turnaround Time

- <90 days on average

## Familial Searching

### Work performed at BCI

- STR and Y-STR profiles
- Requires sufficient male profile

### CODIS database

- Ohio convicted offenders and arrestees

### Search for first degree male relatives

- Brother, father, son

### Cost

- Lab/CIU expenses free to LEA

### Memorandum of Understanding

- Local Lab, Agency, Prosecutor

### Turnaround Time

- 60-90 days

### History and Success

- UK-2002, US-2008
- Convictions in US and Ohio

## Genetic Genealogy

### Work performed at private lab

- SNP Technology
- Need DNA sample of sufficient amount

### Public database

- GEDmatch
- Family Tree DNA

### Identifies to 6 degrees of relatedness

- 5<sup>th</sup>, 6<sup>th</sup> cousins, half relations

### Cost

- Lab work ~\$1,500 to \$12,000+
- Genealogy ~\$3,500+

### Terms of Service Agreements

- Agency, Prosecutor

### Turnaround Time

- 30 days to months/years

### History and Success

- April 2018 – Golden State Killer

# Familial Case Example

## Justin Christian

- Attempted abduction of a 10-year-old Elyria girl in February
- Abduction and sexual assault of a 6-year-old Cleveland girl in May
- DNA profiles generated at BCI and Cuyahoga County Regional Forensic Science Center
- Familial hit to relative (sex offender)
- 35-year sentence

**SEEKING  
INFORMATION**

Serial Child Abductor  
Ohio  
February 25, 2016  
May 21, 2016

**UNKNOWN SUSPECT**



Suspect's vehicle      Suspect's vehicle

**DETAILS**

The FBI's Cleveland Field Office, the Cleveland Police Department, and the Elyria Police Department in Ohio are seeking the public's assistance in locating a serial child abductor.



Photo: DRC website

# IGG Considerations

- Do you have existing STR profile?
  - Partial Profile: Extract available? Retesting necessary?
- Existing evidence for DNA testing is the source:
  - Saliva, hair, semen, blood, bone, teeth
- Will this consume all of your DNA?
- Any other DNA available for future testing?
- Deceased subjects and UHR
  - Exhumation: What remains should be taken for testing?
- Retention of remains or additional sample?
- Which lab is best fit for your DNA to get the best results?
  - Whole Genome Sequencing (WGS) vs. microarray
- Raw data file retention

# Laboratory Partners



DNASolutions®



# Laboratory Partners

Features	Astrea	Bode	DNA Labs International	DNA Solutions	GeneByGene	Genologue	Inter-mountain Forensics	Othram	Parabon
Extraction: Blood	✓	✓	✓	✓	✓ <sup>§</sup>	✓	✓	✓	✓ <sup>†</sup>
Extraction: Bone	✓	✓	✓	✓	✗	✗	✓	✓	✓ <sup>†</sup>
Extraction: Tissue	✓	✓	✓	✓	✗	✓	✓	✓	✓ <sup>†</sup>
Extraction: Semen	✓	✓	✓	✓	✓ <sup>§</sup>	✗	✓	✓	✓ <sup>†</sup>
Extraction: Rootless Hair	✓	✓	✓	✗	✗	✓	✓ <sup>*</sup>	?	✓ <sup>†</sup>
Microarray	✗	✓ <sup>***</sup>	✗	✓	✓	✗	✗	✗	✓
WGS	✓	✓ <sup>***</sup>	✓	✗	✓	✓	✓	✓	✓
Bioinformatics	✓	✓ <sup>***</sup>	✓	✓	✓	✗	✓ <sup>**</sup>	✓	✓
Additional Features	Whole Genome Enrichment		Kintelligence Available	AABB accredited relationship testing (STR)	Includes FTDNA and GEDmatch upload	<ul style="list-style-type: none"> <li>Artifact testing</li> <li>Extraction from FFPE samples</li> </ul>	<ul style="list-style-type: none"> <li>Nonprofit</li> <li>Kintelligence Available</li> <li>Artifact testing</li> </ul>		Snapshot Phenotyping

**NOTE:** This resource is intended for informational purposes only. The RCNJ IGG Center does not endorse any particular lab. Details listed here were compiled with input from the laboratory when available, or from publicly available data if the lab did not respond to inquiry.

\*Performed in partnership (Astrea)

\*\*Performed by Subcontractor (Saber Investigations)

\*\*\*Performed by vendor lab

†All Parabon extraction provided by Marshall University Forensic Science Center

§ Must be single source

# United States Department of Justice Interim Policy: Forensic Genetic Genealogical DNA Analysis and Searching

## Case Criteria:

- Unsolved violent crime
  - Homicide
  - Sex Offense
- Unidentified remains of a suspected homicide victim
- Violent crimes approved by prosecutor when the circumstances present a substantial and ongoing threat to public safety or national security

UNITED STATES DEPARTMENT OF JUSTICE  
INTERIM POLICY  
FORENSIC GENETIC GENEALOGICAL DNA ANALYSIS AND SEARCHING

### I. Purpose and Scope<sup>1</sup>

The purpose of this interim policy is to promote the reasoned exercise of investigative, scientific, and prosecutorial discretion in cases that involve forensic genetic genealogical DNA analysis and searching ("FGGS").<sup>2</sup> It provides guidance to Department agencies when formulating a thoughtful and collaborative approach to important interdisciplinary decisions in cases that utilize this investigative technique. Collaboration between investigators, laboratory personnel, and prosecutors is important because the decision to pursue FGGS may affect privacy interests, the consumption of forensic samples, and law enforcement's ability to solve violent crime.

The Department must use FGGS in a manner consistent with the requirements and protections of the Constitution and other legal authorities. Moreover, the Department must handle information and data derived from FGGS in accordance with applicable laws, regulations, policies, and procedures. When using new technologies like FGGS, the Department is committed to developing practices that protect reasonable interests in privacy, while allowing law enforcement to make effective use of FGGS to help identify violent criminals, exonerate innocent suspects, and ensure the fair and impartial administration of justice to all Americans.

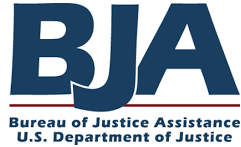
The Department will continue to assess its investigative tools and techniques to ensure that its policies and practices properly reflect its law enforcement mission and its commitment to respect individual privacy and civil liberties. This interim policy establishes general principles for the use of FGGS by Department components during criminal investigations and in other circumstances that involve Department resources, interests, and equities.

The scope of this interim policy is limited to the requirements set forth herein. It does not control investigative, scientific, or prosecutorial activities or decisions not specifically addressed. The Department's individual law enforcement components may issue additional guidance that is consistent with the provisions of this interim policy.

<sup>1</sup> This interim policy provides Department components with internal guidance. It is not intended to, does not, and may not be relied upon to create any substantive or procedural rights or benefits enforceable at law or in equity by any party against the United States or its departments, agencies, entities, officers, employees, agents, or any other person in any matter, civil or criminal. This interim policy does not impose any legal limitations on otherwise lawful investigative or prosecutorial activities or techniques utilized by the Department of Justice, or limit the prerogatives, choices, or decisions available to, or made by, the Department in its discretion.

<sup>2</sup> As used in this interim policy, the term 'forensic genetic genealogical DNA analysis and searching,' or 'FGGS,' means the forensic genetic genealogical DNA analysis of a forensic or reference sample of biological material by a vendor laboratory to develop an FGG profile and the subsequent search of that profile in a publicly-available open-data personal genomics database or a direct-to-consumer genetic genealogy service.

# Additional Resources



## Funding:



**DNA Doe Project**

## Caution:



# Cold Case Criminal Intelligence



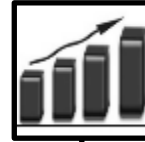
## Strategic Analysis

- Evaluate current crime data to establish trends that will impact long-term policy



## Tactical/Operational Analysis

- Provide short-term analysis with a focus on a specific crime problem or case



## Administrative Analysis

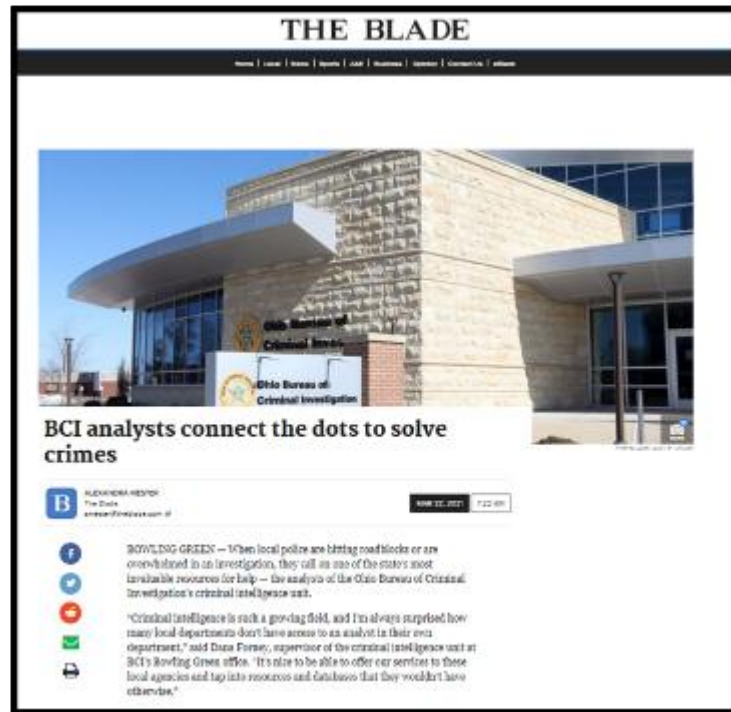
- Supports the executive functions of the agency

# Criminal Intelligence Unit

The Criminal Intelligence Unit serves as a force multiplier, using powerful tools and analysis to expose criminal activity throughout the state — work that makes solving major crimes more likely.

Specialized services:

- Subject workups
- Timelines and link charts
- Investigative support
- Cell phone and application analysis
- IoT analysis
- Prosecutor and trial presentations
- Firearms trace
- Identify associates, assets, and next of kin



# Criminal Intelligence Unit

Intelligence Summary Sheet

Ohio Bureau of Criminal Investigation  
Criminal Intelligence Unit

Case Number: 2025-1234

Subject Name: John Doe DOB: 01/01/1900

Alias: Johnny D SSN: 123-45-6789

FBI: 12345A29 DL#: EX987456

SID(S): X956553 Height: 5' 10"

Misc: Weight: 220

Felon  Active Warrant (See Notes)  NCIC

CCW  Approach With Caution  DNA in CODIS

ADDRESSES:

Street Address	City	State	ZIP	Current	Comments
123 Main St	Columbus	OH	43215		Current - Recent LPR
456 2nd Ave	Columbus	OH	43215		

TELEPHONE(S):

Phone Number	Type	Name Listed To	Carrier	Dates
(614) 555-1234	Cell			
-Select-				
-Select-				
-Select-				
-Select-				

EMAIL ADDRESS(S):

Type	User Name	User ID#	Link
	john.doe@email.com		

MOTOR VEHICLE(S):

Plate	Year/Color/Make/Model	VIN	Registered Owner
OH-ABC-1234	2013 Honda Accord		

## Law Enforcement Sources

- OHLEG
- LEADS (+NCIC Offline)
- N-Dex
- ViCAP

## Commercial Sources

- Accurint/LexisNexis, TLO, CLEAR
- Address History
- Phone Numbers
- Possible Relatives
- Possible Associates
- Email Addresses
- Possible Employment/Business

## Open Source Intelligence

- Social Media
- Newspapers (archived)
- Obituaries
- True Crime
- Other Open Sources

# Cold Case Criminal Intelligence

## Case File

- Organization
- Digital Case File
- Media Conversion
- Interactive Case Presentation
- LexisNexis CaseMap

# Cold Case Criminal Intelligence

## Analysis and Visuals

- Investigative Tool
- Identifying Assets and Relationships
- Grand Jury and Trial

# Case Example: Louis Taylor



Urbana, Ohio



87-year-old Lou Taylor was found beaten inside his home on October 25, 2011. He was flown to Miami Valley Hospital in Dayton and later transferred to Hospice of Dayton where he later died.



Police located his 2006 Jeep Liberty at the Long John Silver's restaurant in Springfield. A suspect, Josiah Mathews, was developed that had recently been hired by Taylor to do landscaping and yard work.

# Case Example: Louis Taylor

CRIME AND LAW

## Jury finds defendant guilty of aggravated murder, other felonies in 9-year-old homicide



By **WHIO Staff**

October 28, 2022 at 6:37 pm EDT



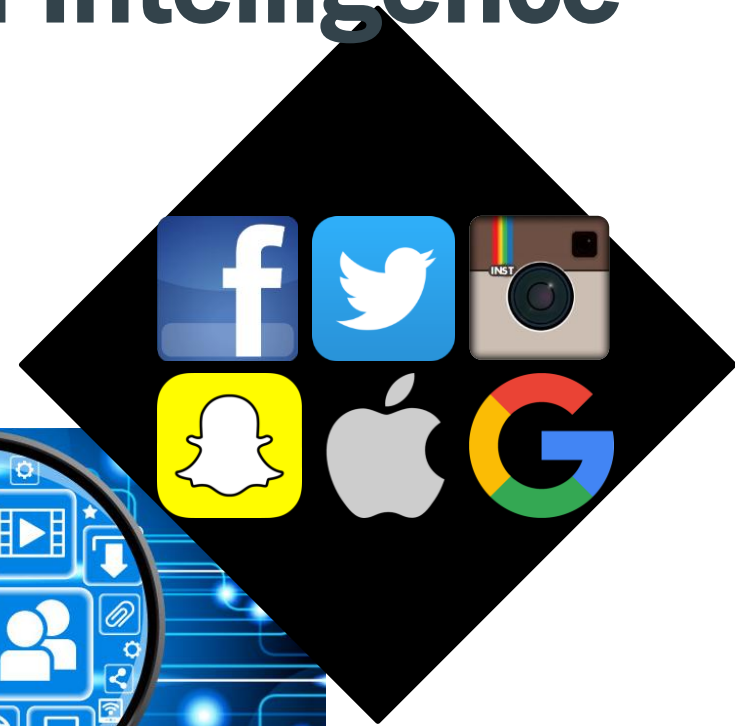
URBANA — A Champaign County Common Pleas jury on Friday returned a guilty verdict of aggravated murder and several felonies in the 2011 slaying of an 87-year-old Louis Taylor, who died several weeks after police found him in his home, Urbana Police Chief Matt Lingrell said.

Josiah Wayne Mathews, 30, was convicted of aggravated murder, murder, aggravated robbery, grand theft of a motor vehicle, tampering with evidence and felonious assault in the death of Taylor, who was found severely beaten in his home on Dorothy Moore Avenue the morning of Oct. 25, 2011.

# Cold Case Criminal Intelligence

## Technology Considerations

- Digital Forensics
- Call Detail and Cell Sites
  - Billing Records
- Social Media Apps
- Cell Site vs Geolocation
- Geofencing and Tower Dumps



# AGO Website: Unsolved Homicides



[www.OhioAttorneyGeneral.gov/OhioUnsolvedHomicides](http://www.OhioAttorneyGeneral.gov/OhioUnsolvedHomicides)

By highlighting cold cases through the Ohio Attorney General's Office, BCI and local law enforcement agencies can:

- Bring widespread visibility to a case
- Increase the likelihood that tips may help bring a perpetrator to justice and victims' loved ones a sense of closure
- Compare details of cases in their jurisdictions with unsolved homicides elsewhere, helping to identify linked cases

**In This Section** ⊖

- All Unsolved Homicides

**Related Publications** ⊕

**Law Enforcement > Local Law Enforcement > Unsolved Homicides**

## Ohio Unsolved Homicides

The Ohio Bureau of Criminal Investigation (BCI) provides visibility and investigative resources to help local law enforcement agencies resolve unsolved homicides. Through this database, BCI provides details and photos related to unsolved homicides and solicits tips from the public to assist local law enforcement in pursuing their investigations.

BCI defines an unsolved homicide as a homicide or questionable death that remains unsolved after being reported to law enforcement and for which there are no apparent viable leads.



To request that an unsolved homicide be included in BCI's statewide database and featured on this website, Ohio law enforcement agencies should contact BCI at 855-BCI-OHIO (224-6444) or e-mail [OhioUnsolvedHomicides@OhioAttorneyGeneral.gov](mailto:OhioUnsolvedHomicides@OhioAttorneyGeneral.gov) and reference Ohio Unsolved Homicides.

Search Ohio homicide victims by name, city or keywords.

 ➤


[View All Cold Cases](#)

### Featured Cases

<p><b>Ralph Johnson</b></p>  <p>Athens, Ohio Incident date: 11/18/1989 Case number: 3259</p> <p><a href="#">Submit a Tip</a> <span>➤</span></p> <p><a href="#">Print Poster</a> <span>➤</span></p>	<p><b>Amy Mihaljevic</b></p>  <p>Bay Village, Ohio Incident date: 10/27/1989 Case number: 3258</p> <p><a href="#">Submit a Tip</a> <span>➤</span></p> <p><a href="#">Print Poster</a> <span>➤</span></p>
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**DAVE YOST**  
**UNSOLVED HOMICIDE**

**Keith Bosley**




**Case number:** 1217  
**Incident location:** Robert Street  
Columbus, Ohio - Franklin County  
**Incident date:** 9/23/2018  
**Homicide date:** 9/23/2018  
**Date of birth:** 1/10/1962  
**Gender:** Male  
**Race/Ethnicity:** Black  
**Height:** 5'09"  
**Weight:** 150  
**Hair color:** Brown  
**Eye color:** Brown  
**Law enforcement agency:** Columbus Police Department

**Details**


On Monday, September 23, 2018, at 11:05am, 51-year old Keith Bosley was found dead inside his residence on Robert Street. It appeared Mr. Bosley opened his back door during the overnight hours and was unexpectedly shot and killed. Detectives are trying to identify any vehicles seen exiting the alley in a dark SUV with blue parking lights near Mr. Bosley's home during the same time period as the murder. Crime Stoppers is offering a cash reward for any information leading to the arrest and/or indictment of the person(s) responsible for this crime. Anyone with information about this crime is asked to call Crime Stoppers at (614-461-TPPS) (4477) or go to our website at [www.ohio-crimstoppers.org](http://www.ohio-crimstoppers.org) and e-mail [your tip](mailto:your tip).

**Additional pictures**



**Contact**

Anyone with additional information or questions regarding this case should [submit@ago.us](mailto:submit@ago.us)

  
855-BCI-OHIO (855-224-6444)



# AGO Website: Cold Case Unit



[Law Enforcement](#) > [Bureau of Criminal Investigation](#) > [Investigation Division](#) > Cold Case Unit

## Cold Case Unit

Unsolved homicides and sexual assaults are some of the most challenging and frustrating investigations facing law enforcement officers, and Attorney General Dave Yost has made it a top priority to offer help.

A new unit at the Ohio Bureau of Criminal Investigation, called the Cold Case Unit (CCU), reaches out to local law enforcement agencies to initiate a fresh look at unsolved cases. The unit offers new forensic analysis and investigative resources.

"We can make a difference, even when years have passed since a murder or sexual assault," Yost says. "The passage of time can actually help, in that some witnesses become more willing to cooperate and technology advances. Consider, for example, how DNA testing has unmasked, time and again, violent criminals who got away with living among us for too long."

### Cold Case Q&A



What makes an unsolved case a cold case

### Unsolved Cases



Some of the cases CCU is assisting with

### Sexual Assaults Section



A specially focused section of the CCU

### Tools & Methodologies



From DNA testing to criminal intelligence

### Successes



Previous cold cases solved at BCI

Website: [OhioAttorneyGeneral.gov/CCU](http://OhioAttorneyGeneral.gov/CCU)

# How to contact us:

## Ohio Bureau of Criminal Investigation

[www.OhioAttorneyGeneral.gov/BCI](http://www.OhioAttorneyGeneral.gov/BCI)

855-BCI-OHIO

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**DAVE YOST**

OHIO ATTORNEY GENERAL

