Ohio CODIS Operating Procedures

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1 CODIS Overview

The acronym CODIS stands for the Combined DNA Index System. The CODIS software is an investigative tool that is used by DNA laboratories associated with government law enforcement agencies to compare DNA profiles and to identify investigative leads in criminal cases. ~~These comparisons result in crimes being linked together and/or samples from a crime being linked to a known source (offender samples or suspect samples).~~
NOTE: Convicted Offender and Arrestee samples will be referred to collectively as offender samples. ~~In some instances, it may be necessary to refer to the samples as Arrestee or Convicted Offender.~~

An investigative lead may be made by:

a. Linking DNA profiles from different unsolved criminal cases together
b. Linking DNA profiles from an unsolved criminal case to a solved criminal case
c. Linking an offender to a criminal case where no suspect has been identified or no suspect standard has been submitted to the laboratory for confirmation
d. Identifying unidentified human remains using an offender sample, suspect samples, direct sample from a missing person or samples from known relatives

The CODIS database is a secure system and contains only the necessary information for processing DNA matches. No criminal history, case related information, social security or other identifying information is entered into the database for samples, except for the metadata allowed for Unidentified Human Remains, Missing Person, ~~and~~ Forensic Unknown samples marked for the DISC Index, *and Offender samples processed at a booking station.* ~~DISC stands for DNA Index of Special Concern and this index will be used to identify those profiles that will be searched against Arrestee profiles processed and enrolled at a booking station under the FBI Rapid DNA program.~~

~~When a match is made between two crime scene samples, the laboratories responsible for the DNA profiles must contact each other to verify the match and exchange case information if the match is determined to be a hit.~~

~~When a forensic sample matches an offender DNA profile, the casework laboratory verifies the match is a hit and then contacts the offender DNA laboratory for the name of the individual. This request triggers a verification process that must be performed before a name may be released. Once the name is released to the Law Enforcement Agency, a new sample should be collected from the individual for submission to the casework laboratory if it is not a conviction match.~~

CODIS Network

The CODIS system in Ohio must be used in accordance with state law and *the "rules" governing eligibility, disclosure, and release of DNA identification and analysis information. Multiple sources are used collectively:*

- *The DNA Identification Act of 1994 (codified at 34 U.S.C. §12592(b)(3));*
- *The FBI's NDIS Operational Procedures Manual (NDIS OPM);*
- *Federal Register/Vol. 61, No. 139/Thursday, July 18, 1996/Notices.*
- *The laboratory's signed MOU with the FBI.*

1.1 Hierarchy

The CODIS network is made up of three levels: local, state, and national. The CODIS hierarchy is linked through the Criminal Justice Information System Shared Enterprise Network (CJIS-SEN). Local laboratories in the state submit DNA profiles to the state level and the state level submits eligible profiles to the national level. Profiles are searched at the national level every business night. Matches are sent directly to both the state and local laboratories.

LDIS = Local DNA Index System
SDIS = State DNA Index System
NDIS = National DNA Index System

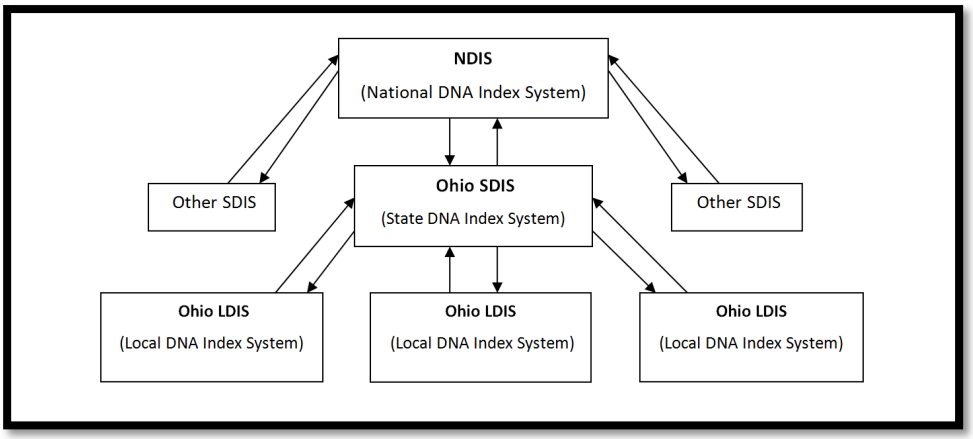


Figure 1. Example of the CODIS Network Hierarchy.

LDIS

In Ohio, multiple local labs participate in the CODIS network. ~~These laboratories are known as LDIS.~~ *The local CODIS database is commonly referred to as LDIS or as a casework laboratory*. An LDIS only has ~~will house~~ eligible DNA records developed by their local laboratory only.

Table 1. Ohio CODIS participating local laboratories

Name of Lab	**Location**	**ORI**
Bureau of Criminal Investigation - London Crime Laboratory	London	OHBCI0001
Bureau of Criminal Investigation - Richfield Crime Laboratory	Richfield	OHBCI0028
Columbus Police Department	Columbus	OHCOP0000
Cuyahoga County Regional Forensic Science Laboratory	Cleveland	OH018013K

Hamilton County Coroner's Office	Cincinnati	OH031013Y
Lake County Regional Forensic Laboratory	Painesville	OH043013Y
Mansfield Police Department Crime Laboratory	Mansfield	OH0700100
~~Miami Valley Regional Crime Laboratory~~	~~Dayton~~	~~OH0570005~~

SDIS

Ohio's State DNA Index System (SDIS) is located at the London, BCI Databasing laboratory. SDIS houses eligible DNA ~~profiles~~ records submitted by LDIS laboratories and Offender records developed by the Databasing laboratory.

NDIS

The National DNA Index System (NDIS) is a centralized index of DNA records administered by the FBI. DNA profiles from SDIS that meet the NDIS entry requirements specified in the NDIS Operational Procedures are uploaded electronically via CJIS ~~SEN~~ *connection* from SDIS to NDIS.

Ohio CODIS Local Administrators

At every level and location, the CODIS system has a CODIS administrator and an alternate administrator. Local administrators must communicate to their ~~State CODIS Administrator and Alternate~~ *SDIS* any changes regarding persons accessing CODIS, number of *qualified* DNA analysts (if below two), changes to the Technical Leader, or changes to the local or back-up administrator. These duties and requirements to be a CODIS administrator or alternate, are outlined in the FBI Quality Assurance Standards, NDIS *Operating* Procedures Manual, and the CODIS Administrator's Handbook which is a Law Enforcement Sensitive Document.

CODIS and Authority

National Requirements

All NDIS participating laboratories must comply with applicable federal and state law, NDIS Operating Procedures, the current NDIS Memorandum of Understanding (MOU), and FBI bulletins.

DNA profiles entered into CODIS must comply with federal and state law. Ohio laboratories must adhere to the stipulations set forth in the Federal DNA Identification Act of 1994, as amended, the Ohio DNA Database legislation, as amended (§ 109.573 section R.C. 2901.07) and the current FBI NDIS Procedures. Failure to meet the required criteria could result in the termination of a laboratory's participation in CODIS. The DNA Identification Act of 1994 formalized the FBI's authority to govern the establishment and administration of the NDIS. The DNA Act specifies the following categories of data that may be maintained at the national Index:

1. DNA identification profiles of:
   a) persons convicted of crimes
   b) persons who have been charged in an indictment or information with a crime

c) other persons whose DNA samples are collected under applicable legal authorities, provided that DNA samples are solely for elimination purposes and shall not be included in the National DNA Index system

2. Analyses of DNA samples recovered from crime scenes.
3. Analyses of DNA samples recovered from unidentified human remains.
4. Analyses of DNA samples voluntarily contributed from relatives of missing persons and direct samples from missing persons

The Federal DNA Act provides that the DNA identification profiles and DNA analyses offered to the National Index must comply with the Quality Assurance Standards (QAS) issued by the FBI. A change in the DNA Act by the Justice for All Act of 2004, starting October 30, 2006, requires that all laboratories participating in the National Index must be accredited by a non-profit professional association of persons actively involved with the forensic science community and that is recognized by the forensic science community.

The NDIS participating laboratory must undergo an external audit once every two years using the QAS document issued by the FBI. The external audit results must be reported to the FBI.

Ohio Requirements

The Ohio DNA database and the Bureau of Criminal Investigation's (BCI) ability to establish and maintain a DNA database at the state level is outlined in the Ohio Revised Code (ORC) 109.573. Ohio Revised Code 109.573 (B)(1) authorizes the superintendent of the Bureau of Criminal Identification and Investigation to (a) establish and maintain a state DNA laboratory to perform DNA analyses of DNA specimens and (b) establish and maintain a DNA database.

The Ohio CODIS Operating Procedures manual is issue by SDIS. This manual is distributed to the local Ohio labs once a year or anytime a new revision is published. Local Ohio labs shall comply with these procedures.

~~Ohio DNA Collection Requirements~~

~~Persons are collected for the Ohio's DNA Database pursuant to Ohio Revised Code 2901.07 and 2152.74. See sections 8 and 9 manual for further information regarding the collection of these persons for the DNA database.~~

~~BCI will enter and retain a suspect's DNA profile in the SDIS database. The Ohio Revised Code does not explicitly address the issue of suspect DNA profiles. However, Ohio Revised Code section 109.573 defines "DNA database" as "a collection of DNA profiles from forensic casework or from crime scenes." The decision of the Ohio Supreme Court in State v. Emerson (2012), 134 Ohio St.3d 191, concluded that a lawfully collected suspect standard is the product of forensic casework and could properly be retained in the state's DNA information system. See section 2.4.3.2 defines suspect standard as used at SDIS.~~

CODIS Software

~~The CODIS software is designed by and provided to state and local laboratories by the FBI.~~

~~Use of CODIS Software~~

~~The use of the CODIS software must be in accordance with the current version of the user guide and/or instructions provided by the FBI or contractor of the FBI and the signed MOU between the agency and the FBI.~~

~~Distribution~~

~~In accordance with the CODIS license agreement between BCI and the FBI, BCI is strictly prohibited from copying or distributing the CODIS software and associated written material to individuals or organizations outside of the BCI agency.~~

~~Upgrades and Modifications~~

~~The upgrades and modifications to the software are periodically provided to the state and local laboratories by the FBI or a contractor of the FBI. These updates and hotfixes should be completed as instructed by the deadlines given.~~

Goals and Objectives

~~It is the objective of BCI's CODIS program to process all offender samples utilizing validated DNA technology for input into SDIS and NDIS.~~

~~Goals:~~

~~a. To provide Ohio LDIS access to the SDIS system to search qualifying DNA profiles and for upload of qualifying profiles to NDIS.~~

~~b. To provide the criminal justice system with a functional Ohio DNA database (CODIS) to aid law enforcement agencies in criminal investigations.~~

~~c. To provide timely, accurate, and high-quality operations to the law enforcement agencies.~~

2 DNA Record Information

A DNA record is the information in the database that includes the DNA profile and the data required to allow the profile to be searched and managed in the CODIS software. A DNA profile is a set of identification characteristics ~~or numerical representation~~ at each of the loci analyzed.

~~The state database allows additional DNA records that are not accepted at the national level because of the completeness of the profile (i.e. #of Loci, MME, MRE, etc.).~~

CODIS Core Loci

DNA profiles submitted to SDIS and or NDIS shall contain the minimum required CODIS Core Loci as specified for the specimen category. **As of January 1, 2017, an analysis of all 20 CODIS Core Loci shall be attempted for known and forensic samples submitted to CODIS** ~~(this includes Forensic Unknown,~~

~~Forensic Mixture, Forensic Partial, SDIS Forensic Unknown, SDIS Forensic Mixture, and Other).~~ The **Original 13 CODIS Core Loci** are CSF1PO, FGA, TH01, TPOX, vWA, D3S1358, D5S818, D7S820, D8S1179, D13S317, D16S539, D18S51, and D21S11.

- The **Expanded CODIS Core Loci** include the Original CODIS Core Loci plus D1S1656, D2S441, D2S1338, D10S1248, D12S391, D19S433 and D22S1045.

Requirements

- All DNA profiles offered to SDIS and NDIS must be generated by an accredited laboratory and be produced in accordance with the current FBI Director's Quality Assurance Standards (QAS), as required by the DNA Identification Act of 1994, [42 U.S.C. §14132(a)(2)]. These DNA profiles must be technically reviewed per the QAS before the upload and searching of these profiles at SDIS.
- All DNA profiles submitted to CODIS must be interpretable.
- Composite DNA profiles may be submitted.
- The Federal DNA Act specifies the categories of DNA profiles that may be stored and searched at NDIS. DNA profiles submitted to SDIS for NDIS upload shall meet the NDIS eligibility and interpretation requirements. Refer to NDIS Operational Procedures for additional information regarding the eligibility requirements and definitions.
- SDIS only profiles shall meet NDIS eligibility and interpretation requirements, but may have lower minimum core loci, MME, MRE or type of record allowed, such as suspect standard. Only those SDIS specimen categories listed in this manual are allowed at SDIS.

Format of STR and Mitochondrial DNA Records

- Each local laboratory shall name DNA records in CODIS so that the source of the record origin (for example, case number and item number) may be identified by the laboratory.
    - STR Formatting:
        - STR alleles below or above the allelic ladder (as indicated in the NDIS Operational Procedures Manual) are entered as < (smallest allele) or > (largest allele), respectively.
        - The STR DNA result from each locus will be entered in the form of "p,q" for heterozygotes and "p,p" or "p" for homozygous locations.
        - Alleles shall be entered according to their relative base pair size even if they are between two points on the allelic ladder. For example, an allele between alleles 10 and 11 on a ladder has been calculated to be a 10.2, the allele should be entered as a 10.2.
        - Partial Locus Indicator should be used for those locations where allelic dropout may be present for forensic partial samples.
        - An obligate allele notation may be used to designate the allele that must be present in a candidate. For example, a forensic mixture at vWA is a 22, 24, 26. If the candidate must have a 24 allele, enter this mixture as: 22, 24**+**, 26. This profile will hit to the following allelic

combinations at moderate stringency: 24, 26 -or- 24, 22 -or- 24. It will not hit to a 22, 26.

- Record information:
  - The source ID shall be updated for samples. A suspect standard, arrestee, and convicted offender ~~would always~~ *should* have a source ID of "Yes." For forensic profiles associated with a known suspect standard, select "Yes" in the source ID field. *For mixtures not fully attributed to individuals and* forensic profiles not associated with a known suspect standard, select "No" in the source ID field.
  - A DNA profile developed from Sexual Assault Kits (SAK) from anonymous victims must be entered as SDIS Forensic Unknown, start the entry with "DOE." For BCI cases, if the name of the victim is identified within the kit, the specimen ID should end with FD (Former Doe.
- Mitochondrial Formatting:
  - Mitochondrial(mt) DNA records submitted to NDIS shall be generated in accordance with the SWGDAM Interpretation Guidelines for Mitochondrial DNA Analysis by Forensic DNA Testing Laboratories (mtDNA Interpretation Guidelines). Only the control region data shall be entered, stored, uploaded and searched in CODIS. All mtDNA records sent to NDIS shall follow the SWGDAM Nomenclature Rules of the mt DNA Interpretation Guidelines.

DNA Record Specimen Categories

DNA profiles entered into CODIS must be placed into a specimen category based on the source of the biological material, the completeness of the DNA profile and how it will be searched at NDIS and SDIS.

Different specimen categories are present at the national and state level. If a specimen category is accepted at NDIS, the SDIS requirements are the same as the NDIS requirements. Local laboratories may choose to define a specimen category for their local level based on internal policies. *It is advised for DNA records not qualifying for a higher lab are updated to a local specific specimen category, if not removed from LDIS.* See table 2 for a list of common SDIS/NDIS specimen categories.

2.1 Forensic Specimen Category Guidelines

These guidelines are for all forensic specimen categories: Forensic Unknown, Forensic Partial, Forensic Mixture, Forensic Targeted, SDIS Forensic Unknown, SDIS Forensic Mixture, and Other.

a. Which forensic specimen category should be used for a specific forensic profile is dependent on ~~the DNA profile~~: how many loci are present, whether the profile is single source or a mixture, MME (Moderate Match Estimate) or MRE (Moderate Rarity Estimate) if applicable, and any potential allelic drop out. The flow charts in Appendix A and B, may be used to aid in

the determination of which forensic category the DNA profile shall be entered.

b. All DNA profiles entered in a forensic specimen category maintained at the state or national level must be:

1. developed from biological material left behind at a crime scene and
2. would potentially link a subject to the crime.

c. An item taken directly from the suspect or from the suspect's possession (home, car, backpack, etc.) is not considered a forensic sample.

d. Case facts and other information should be used in deciding as to whether a profile is eligible. The CODIS Administrator's Handbook, which is a Law Enforcement Sensitive Document produced by the FBI, should be referenced for examples as needed.

e. No victim, witness, or elimination profiles shall be entered into CODIS as a forensic unknown. In cases where an elimination standard may not be obtained or has not been received, a request for the elimination standard must be documented. The forensic unknown then may be entered into CODIS. Once an elimination standard is received or the forensic unknown is determined to match the elimination or victim standard, the forensic unknown will be removed from CODIS.

Note: If the hit has been confirmed and the investigative information released, hit information will remain LIMS. A note will be added to the hit record indicating the reason the individual was removed.

f. If DNA results from one case indicate only one subject is potentially linked, enter the most complete single source DNA profile. The less complete profile does not need to be entered into CODIS. If multiple subjects are potentially linked to the case, enter the most complete profile for each individual profile.

2.2 Commonly Used Forensic Specimen Categories

2.2.1 Forensic Unknown (accepted at NDIS)

- A single source DNA profile or a single source DNA profile fully deduced from a mixture.
- Minimum number of original core loci = 13.
- May have 1 locus with 3 alleles; all the remaining loci may have up to 2 alleles.
- If additional expanded loci are partial they must have the partial indicator marked and should be changed to Forensic Partial.

2.2.2 Forensic Partial (accepted at NDIS)

- A single source DNA profile or a single source DNA profile fully deduced from a mixture with either locus or allelic dropout ~~at any of the 13 core loci.~~
- Moderate Match Estimate (MME) threshold = 1.000E+007.
- Minimum number of original core loci = 8.
- May have 1 locus with 3 alleles, all the remaining loci may have up to 2 alleles.
- The partial profile indicator and/or partial locus indicator should be updated. The partial locus indicator may be used to indicate the specific locus with potential allelic dropout. If a locus indicator is set to "partial," it will automatically set the partial profile indicator to "yes", otherwise it must be manually set.

2.2.3 Forensic Mixture (accepted at NDIS)

- An interpretable DNA profile that contains contributors from more than one source.
- Moderate Match Estimate (MME) threshold = 1.000E+007.
- Minimum number of original core loci = 8.
- Shall have no more than 4 alleles at any locus.
- If the major/minor contributors can be resolved ~~from the~~, enter the individual DNA profiles into CODIS. Classify the major/minor DNA profiles entered using the Forensic Unknown or Forensic Partial specimen categories (as appropriate), not Forensic Mixture.

2.2.4 Forensic Targeted (accepted at NDIS)

- An interpretable DNA profile that does not meet the MME threshold.
- May be either a single source or mixed DNA record.
- Moderate Rarity Estimate (MRE) threshold = 1.000E+007.
- Minimum number of original core loci = 8.
- Is searched "stringency by locus" at NDIS.
  - Loci marked partial, have more than 2 alleles or have an obligate allele will be searched at moderate stringency. All other loci will be searched at high stringency.

2.2.5 SDIS Forensic Unknown (only accepted at SDIS)

- A single source DNA profile or a single source DNA profile fully deduced from a mixture and does not meet the MME or MRE threshold to qualify for NDIS.
- Moderate Match Estimate (MME) threshold = 1.000E+005.
- Minimum number of original core loci = 8.
- May have 1 locus with 3 alleles; all the remaining loci may have up to 2 alleles.

2.2.6 SDIS Forensic Mixture (only accepted at SDIS)

- An interpretable DNA profile that contains contributors from more than one source and does not meet the MME or MRE threshold for NDIS.
- Moderate Match Estimate (MME) threshold = 1.000E+005.
- Minimum number of original core loci = 8.
- Shall have no more than 4 alleles at any locus.

2.2.7 Other (only accepted at SDIS)

- A DNA profile of those alleles not attributed to the known parent of a child or fetus sample. An exception is made when the known parent and child have the same homozygous profile allowing the known allele to be entered.
- **This profile may should be entered as a Forensic Partial if it meets the minimum MME -or- Forensic Targeted if it meets MRE.**
- Minimum number of original core = 8 & all 13 original core available for manual comparison.

2.2.8 SDIS Low Loci (only accepted at SDIS)

- A single source DNA profile or a single source DNA profile fully deduced from a mixture and does meet the SDIS MME threshold. This DNA record was entered into CODIS before May 1, 2016.
- The Moderate Match Estimate (MME) threshold = 1.000E+005.
- Minimum number loci = 5.
- No new samples will be accepted for this specimen category.

2.2.9 SDIS X-Core Loci (only accepted at SDIS)

- A single source DNA profile or a single source DNA profile fully deduced from a mixture and does meet the SDIS MME threshold (using the original core -only).
- Moderate Match Estimate (MME) threshold = 1.000E+005 (using the original core -only).
- Minimum number loci = 8 (but may be either the original core loci, or expanded).
- May have 1 locus with 3 alleles, all the remaining loci may have up to 2 alleles.

2.3 SDIS Level Specimen Categories (non-Forensic)

2.3.1 QC Sample

- Is a DNA profile obtained from samples not attributed to the crime, but from a consumable or a common substrate used to collect/process the biological evidence and cannot be attributed to other samples worked by the laboratory or known staff.
- Minimum number of 13 original core loci should be 5.

2.3.2 Suspect Standard

- Is a DNA profile derived from a sample that has been lawfully collected by a Law Enforcement Agency during the course of a criminal investigation for the purposes of comparisons to DNA evidence. It is not a sample collected for elimination purposes or from a secondary sample such as a cigarette butt.
- A juvenile suspect, age 10 and older, shall have their DNA record entered if the submitted case is associated with a felony offense or an offense of violence, as defined by section 2901.01(A(9) of the Ohio Revised Code.
- Minimum number of CODIS Core Loci (original or expanded) is 10.

Note: The Ohio Revised Code does not explicitly address the issue of suspect DNA profiles. However, section 109.573 defines "DNA database" as "a collection of DNA profiles from forensic casework or from crime scenes." A decision of the Ohio Supreme Court in State v. Emerson (2012), 134 Ohio St.3d 191, concluded that a lawfully collected suspect standard is the product of forensic casework and could properly be retained in the state's DNA information system.

2.4 Missing Person and UHR Specimen Categories

These are NDIS accepted categories and must meet the NDIS requirements for upload to SDIS. ~~No minimum number of autosomal STR loci are listed. No minimum number is listed for the second technology.~~ All complete results should be added to CODIS. ~~Likelihood thresholds are used in the evaluation for samples associated with these searches.~~

YSTR loci should not include the rapidly mutating loci: DYS576, DYS627, DYS518, DYS570, DYS449 and DYF387S1 a/b.

~~DNA records from these categories should be removed from CODIS for the following circumstances:~~

~~(1) if the missing person corresponding to reference samples has been identified;~~
~~(2) if it is determined that the individual voluntarily providing the reference sample is no related to the missing person.~~
~~(3) At the request of the individual who voluntarily provided the reference sample; (4) if the remains identified are a complete set or intact individual.~~

2.4.1 Biological Child, Biological Mother, Biological Father, Biological Sibling, Maternal Relative, Paternal Relative and Spouse

- Is a DNA profile from a close biological relative used to assist identification of a missing person/unidentified human remains. Per the Federal DNA Identification Act [34 U.S.C. §12592(a)(4)] these samples are voluntarily contributed. This information must be document by

either by signing a consent form in the presence of law enforcement or if a signature cannot be obtained, an affidavit from the law enforcement agency indicating the sample was collected voluntarily may be used. DNA records developed from relatives of a missing person shall only be searched against the Unidentified Human (Remains) Index ~~and not against the Forensic or Offender Indexes.~~

- A single source DNA profile.
- Minimum number of 13 original core loci should be 13. (~~fully resolved loci only- both alleles present for a locus).~~
- Second technology should be associated (Y-STR/mitochondrial).
- YSTR loci should not include the rapidly mutating loci.
- These DNA records are added to a pedigree tree for a specialized search. A Missing Persons's Pedigree contains genetic information from two or more biological relatives of missing persons (may include spouses, where applicable). A Single Typed Node Pedigree contains the genetic information from only one biological relative of the missing person.

2.4.2 Deduced Missing Person

- Is a DNA profile of a reported missing person that has been generated by examining intimate items believed to belong to the missing person such as a tooth brush. The DNA profile should be ~~and~~ compared to close biological relatives, if possible.
- A single source DNA profile or deduced profile.
- Minimum number of 13 original core loci should be 7 and include Amelogenin (fully resolved loci only- both alleles present for a locus)
- Second technology should be attempted (Y-STR/mitochondrial)
- YSTR loci should not include the rapidly mutating loci.

2.4.3 Missing Person

- Is a known reference sample from an individual that is missing. The source of the DNA has been verified as originating from the missing person and is stored in the Missing Person Index.
- A single source DNA profile or deduced profile.
- Minimum number of 13 original core loci should be 7 and include Amelogenin (fully resolved loci only- both alleles present for a locus).
- Second technology should be attempted (Y-STR/mitochondrial)
- YSTR loci should not include the rapidly mutating loci.

2.4.3 Unidentified Person

- Is a DNA profile developed from a recovered deceased (including body parts and/or tissue) or an individual who is unidentified (children or others who cannot or refuse to identify themselves).

- A single source DNA profile or deduced profile.
- If autosomal STRs are developed, the minimum number of 13 original core loci should be 7 and include Amelogenin (fully resolved loci only- both alleles present for a locus).
- Mito only or Y-STR only UHR's may be searched, without an autosomal DNA profile.
- A second technology should be attempted (Y-STR/mitochondrial).
- YSTR loci should not include the rapidly mutating loci.

Table 2. Summary of the commonly used specimen categories at Ohio SDIS.

Specimen Category	Abbreviation	Required Core Loci	Accepted at SDIS	Accepted at NDIS	Comments
Arrestee	A	20	✓	✓	1 locus with up to 3 alleles and all remaining loci with up to 2 alleles
Convicted Offender	CO	20	✓	✓	1 locus with up to 3 alleles and all remaining loci with up to 2 alleles
Deduced Missing Person & Missing Person	MP	7*& Amel	✓	✓	Accepted at NDIS; see NDIS Operational Procedures for additional information
DISC-enabled	DISC	13	✓	✓	See DISC
Forensic Unknown	FU	13*	✓	✓	1 locus with up to 3 alleles and all remaining loci with up to 2 alleles
Forensic Mixture	FM	8*	✓	✓	No more than 4 alleles at any locus & MME threshold 1.000E+007
Forensic Partial	FO	8*	✓	✓	1 locus with up to 3 alleles and all remaining loci with up to 2 alleles & MME threshold of 1.000E+007
Forensic Targeted	FT	8*	✓	✓	**MRE** threshold of 1.000E+007 (see definition)
Multi-allelic offender	MAO	20	✓	✓	Multiple alleles at multiple loci allowed
Other	OTH	10*	✓		See Definition in Manual
QC Sample	QC	5*	✓		See Definition in manual
SDIS Forensic Unknown	SFU	8*	✓		1 locus with up to 3 alleles and all remaining loci with up to 2 alleles & MME threshold of 1.000E+005
SDIS Forensic Mixture	SFM	8*	✓		No more than 4 alleles at any locus & MME threshold of 1.000E+005
SDIS Low Loci	SLL	5*	✓		1 locus with up to 3 alleles and all remaining loci with up to 2 alleles & MME threshold of 1.000E+005
SDIS X-Core Loci	SXC	8 (expanded or original)	✓		1 locus with up to 3 alleles and all remaining loci with up to 2 alleles & MME threshold of 1.000E+005
Suspect	S	10	✓		See Definition in Manual
Staff	Staff	20	NA	NA	Searched locally only
Unidentified Person	UP	**7*** & Amel	✓	✓	Accepted at NDIS; see NDIS Operational Procedures for additional information
Biological Child Biological Father Biological Mother Biological Sibling Spouse Maternal Relative Paternal Relative		13* & Amel	✓	✓	Accepted at NDIS; see NDIS Operational Procedures for additional information

*Only the original CODIS core loci may count toward the minimum.

Indices

Specimen categories are added to indexes. Indexes function as search filters and allow users to group specimens. CODIS administrators are responsible for defining the association between indexes and specimen categories. Specimens are searched based upon the indexes with which they are paired.

The minimum number of loci for an index at SDIS correlates to the least stringent specimen category in the index. Local laboratories may define a minimum number of loci for a local index.

The national level indexes have a minimum number defined by the FBI. See the CJIS internet for the CODIS bulletin for completeness definition of the indexes at the NDIS.

Table 3. State Index Information

Index	**Assigned Specimen Categories**
Arrestee	Arrestee
DNA Index of Special Concern	DISC- enabled Forensic Unknown
Forensic	Forensic, Unknown
Forensic Mixture	Forensic Mixture
Forensic Partial	Forensic Partial
Forensic Targeted	Forensic Targeted
Missing Person & Pedigree Tree	Deduced Missing Person Missing Person
Offender	Convicted Offender
Other	Other
QC Index	QC Sample
Relatives of Missing Person & Pedigree Tree	Biological Child Biological Father Biological Mother Biological Sibling Maternal Relative Paternal Relative
SDIS Forensic Unknown	SDIS Forensic Unknown
SDIS Forensic Mixture	SDIS Forensic Mixture
SDIS Low Loci	SDIS Low Loci
SDIS X-Core Loci	SDIS X-Core Loci
Spouse & Pedigree Tree	Spouse
Suspect	Suspect, Known
Unidentified Human Remains	Unidentified Person

DISC (DNA Index of Special Concern)

The DISC Index (DNA Index of Special Concern) is an additional index a forensic unknown can be added to, if it meets certain requirements. The requirements are as follows:

- Complete original core loci (both alleles are present at the 13 locations).
- Unsolved forensic case.
- Forensic case is originating from: homicide, sexual assault, kidnapping or terrorism case.
- Metadata is obtained from the submitting law enforcement agency.

~~**Removal of DNA Profiles Associated with a Local Laboratory**~~

~~Occasionally, a DNA record that was previously entered into CODIS will need to be deleted, expunged, or sealed. The deletion of a forensic, suspect, or other DNA record entered by the~~

~~local laboratory, should be done at the discretion of the local laboratory. The SDIS laboratory does not need to be notified regarding these deletions.~~

~~For the removal of a DNA record associated with convicted offender or arrestee samples, see section 13 "Removal of an Offender DNA Profile from CODIS Software." Section 16 has information about when a sample should be removed from CODIS for Missing Person or Unidentified Person cases.~~

3 DNA Record Upload

The eligibility for uploading DNA records to NDIS is determined by a CODIS user who has successfully completed annual training on specimen eligibility of DNA records for NDIS. Any DNA record entered into an NDIS eligible specimen category will be marked for NDIS upload.

LDIS Uploads to SDIS

The frequency of uploads to the SDIS laboratory from an LDIS laboratory is left to the discretion of the LDIS laboratory. It is recommended an upload be sent at a minimum of once per week.

SDIS Uploads to NDIS

SDIS uploads NDIS-qualifying profiles to NDIS every business day after 8pm or upon request on Saturday and Sunday if NDIS allows.

Reconciliation Report

A ~~upload~~ reconciliation report is generated automatically by the higher-level laboratory for the DNA ~~profiles~~ records and users included in the upload. **It is the responsibility of the lower level laboratory to review the reconciliation report received from SDIS and NDIS to ensure any problems associated with their laboratory's specimens are resolved.** ~~It is recommended that the report be reviewed for completeness based on the sample that was uploaded or marked for removal~~.

Yearly Check of Unmarked Local DNA Profiles

One time per calendar year, LDIS labs should audit DNA profiles that are ~~in an NDIS specimen category, but are not marked for NDIS or have been rejected by NDIS~~ not accepted by NDIS. If the ~~sample~~ record(s) ~~does not qualify for NDIS, but may be accepted at SDIS,~~ qualify for a different specimen category, this record it should be reassigned to an SDIS specimen category.

Full Upload

One time per calendar year, at a minimum, LDIS will be asked to send a full upload to SDIS to ensure that all qualifying DNA profiles are maintained at the state level. A full upload to NDIS by SDIS will be performed one time per year, once all LDIS have submitted a full upload to state. The timing of these uploads will be determined by SDIS and communicated to LDIS. The full uploads may coincide with other software and computer maintenance.

4 Searching DNA Profiles in CODIS

Autosearcher

Autosearcher allows for the searching of forensic, offender and other DNA ~~profiles~~ records against the various indexes maintained in CODIS. Local laboratories may have autosearches that are different from the state or national searches.

SDIS Autosearches

SDIS does not search DNA records from an LDIS against the same LDIS. For example, Columbus Police Crime Lab DNA records are not searched against Columbus Police Crime Lab DNA records at SDIS. This type of search must be completed at LDIS before upload to SDIS.

SDIS searches involving UHR and Missing Person cases will include both identity searches and pedigree searches. These two search types may result in either a match or an association. A match occurs if the DNA records may have originated from the same individual. For example, a DNA record from UHR and the DNA record from an offender sample would result in a match. Associations occur if relatives of a MP are connected to a UHR. A confirmed association is considered a hit.

Appendix F has a schedule of the SDIS searches. Appendix C and D have the specific search parameters.

Table 4. Common SDIS Autosearches Involving Forensic Profiles

Name	Frequency*	Min. # of Loci for a Match	# of Mismatches	Stringency	Comments
BCI Single Source	Every Business Day	8	1	Moderate	None
BCI Mixture	Every Business Day	8	0	Moderate	None
All Specimens Single Source	1 per month	8	1	Moderate	None
All Specimens Mixture	1 per month	8	0	Moderate	None
Monthly SDIS Low Loci	1 per month	5	0	Moderate and High	3 High Stringency Loci: D31358, vWA, and D8S1179
Other	1 per month	10	0	Moderate	None
Unreviewed Offenders	As needed	10	1	Moderate	Internal QC
Offender Duplicate	As needed	10	1	Moderate	Internal QC

Table 5. Common SDIS Autosearches Involving LINK samples

Search Name	Frequency	Min. # of Loci for a Match	# of Mismatches	Stringency	Comments
Missing Persons ID	Weekly (Sun)	7	1	Moderate	UHR requires Amelo
MP to UHR-Mito	Weekly (Sun)	0	0	NA	Mito Required
MP to UHR - YSTR	Weekly (Sun)	8* YSTRS	0	NA	YSTR Required
Rel of MP - UHR -Mito	Weekly (Sun)	8	0	Low	Mito Required
Rel of MP - UHR -Mito	Weekly (Sun)	8	0	Low	YSTR Required (High)

NDIS Autosearches

AutoSearches at NDIS are performed by the FBI every business night. See the NDIS Operational Procedures and the FBI Bulletins regarding the autosearch parameters used at the national level.

Manual Keyboard Search

A manual keyboard search is performed outside of the daily search on a target DNA record that does not reside in the database at the level being searched. Samples searched in this manner are not saved and a new request must be made if the DNA record needs searched again ~~in the future~~. A log of manual keyboard searches performed by Ohio SDIS shall be maintained at F:\BCI\CODIS\KeyBoard Search.

The forensic DNA profile from Ohio or another state must be developed by an accredited laboratory and in accordance with the FBI Director's Quality Assurance Standards (QAS), as required by the DNA Identification Act of 1994, as amended [42 U.S.C. 14132(b)]. The DNA record must be technically reviewed before the manual keyboard search is performed.

Ohio LDIS Requesting a Keyboard Search of a Forensic Profile to other states

A forensic DNA profile may be requested to have a manual keyboard search performed for any of the following reasons:

a. Exigent circumstances

b. The profile does not have enough loci or meet the completeness definitions for National upload

c. The law enforcement agency or LDIS Laboratory may ask the sample to be searched against other state specimen categories that are not accepted at national, such as suspect.

The request shall be made by a local CODIS administrator using the Keyboard Request form from the FBI (found on the CJIS- SEN under forms). This form along with a brief synopsis as to why the request is being made shall be sent to the State CODIS Administrator and Alternate.

The State CODIS Administrator or Alternate will review the information for completeness and will forward the request to all states or specific states as requested by the originator of the target profile. The accompanying information sent to the states may list the local laboratory as the contact. It is the responsibility of the local laboratory to follow up on all results sent to them. The SDIS laboratory will send any information sent only to SDIS directly to the local laboratory.

Non-Ohio Labs Requesting a Keyboard Search of Ohio's Database

Requests from Law Enforcement Agencies for searches of the Ohio database should use the Keyboard Request form from the FBI. Exceptions may be made in exigent circumstances. The request, at a minimum, includes the DNA profile and associated alleles and loci to be searched, the identity and agency of the requesting individual, and contact information. The request will be directed to the State CODIS Administrator or Alternate, who will have the search request processed.

Ohio Keyboard Search Parameters

The minimum number of loci for the search is determined by the Forensic DNA profile, unless it has more than 8 loci. A mixture of stringencies may be applied to the search ~~if required~~. Forensic profiles will be searched against the allowable indexes used in daily searches.

~~The search will be performed at moderate stringency with 1 mismatch for a Forensic Unknown profile with a minimum of 8 loci and an MME threshold of 1.000E+005. The State CODIS Administrator or Alternate may choose to perform a search with a mixture of stringencies at each locus as noted on the keyboard request form. The DNA target profile will be searched against all allowable indexes, based on the daily search parameters, see Appendix C.~~

Keyboard Search Results

a. Matches Generated

Matches generated because of such requests will be sent to the originating laboratory of the forensic unknown profile using Match Manager or alternately using a secure PDF. A notification e-mail will be sent to the requesting laboratory. ~~to let them know the results have been sent.~~ Matches will be saved in Match Manager and it is expected the matches will be evaluated by the requesting laboratory. They will also communicate the disposition of the matches. ~~The disposition of the match should be communicated to the laboratory that performed the search of the forensic profile. The disposition and processing of the hit will proceed as normal.~~

b. No Matches Generated

If no matches are generated from the Manual Keyboard Search, this information will be sent to the requesting agency. The no match will be saved in Match Manager.

c. Communication

The casework laboratory will communicate to the submitting Law Enforcement Agency of the forensic profile results of the keyboard search, as needed.

Rush Search and EUSR (Emergency Upload and Search Request)

A rush search is completed when a forensic unknown profile involves a serious crime and may pose a potential public safety issue which requires a verbal release of an offender name (if an offender is identified during business or non-business hours).

Ideally, a potential rush search request should be made to the State Administrator and CODIS Unit at least 24 hours before the search may need to be performed. A lab should always contact SDIS regardless of the amount of lead time provided. Lead time ensures the SDIS lab has proper personnel available and allows for re-scheduling of CODIS tasks to ensure a timely search can be completed.

Once the profile has been uploaded to SDIS, the LDIS laboratory will communicate this information ~~(non-keyboard request) and will provide~~ including the forensic specimen ID and laboratory point of contact for the verbal release of the offender name, ~~if one is identified~~.

Casework ~~Local~~ labs may also perform a EUSR for a sample that meets the rush criteria ~~on non-business hours for SDIS.~~ It is preferred SDIS is notified before the EUSR is made. Two searches are configured for a SDIS EUSR ~~is requested~~: BCI Mixture and BCI Single Source. The search configurations are found in the Appendix C of this manual. ~~If the forensic DNA record is eligible for NDIS by satisfying a statistical threshold for match rarity and meets all the guidelines outlined in the NDIS Operating Procedures, the record may be uploaded and immediately searched using the EUSR function.~~

5 Match Evaluation

It is the responsibility of the casework laboratories to review all matches generated from SDIS and NDIS searches in a timely manner. The review of the matches should include those steps outlined in the NDIS Operational Procedures Manual.

Casework ~~LDIS~~ Match Evaluation

Casework laboratories should follow their internal procedures to verify that the information placed into the CODIS system is correct and use their match criteria in order to determine the disposition of the candidate match made by the CODIS system. It is the responsibility of the *casework* ~~local~~ laboratory to contact the state or national lab regarding confirmation of a

known sample. Laboratories shall make a good faith effort to review and disposition candidate matches within 30 days of receiving the match.

Update Source ID

Upon a hit/confirmation to a known sample, the forensic sample source ID in CODIS should be updated ~~by LDIS~~ to 'Yes'. ~~either through an "automated setting" in CODIS or manually.~~ If the forensic sample is partial or mixture, the update of the source ID is at the discretion of the Forensic Scientist.

Mixture and Partial DNA profiles

~~SDIS recommends the following~~ For any complex mixture or partial profile *match* evaluation, it is recommended:

If an offender DNA record has missing *expanded* loci that could aid in the mixture/partial profile *match* evaluation, *the casework laboratory* ~~LDIS~~ should request the offender laboratory to perform this testing. For Ohio SDIS, the expanded loci will be added to CODIS if they meet the *minimum* ~~laboratory~~ interpretation guidelines. ~~LDIS~~ Casework should review the additional loci before making a final match/no match determination.

~~It is recommended~~ A match associated with a mixture should be reviewed by a second qualified scientist for final determination of hit or no hit.

Y-STR Loci

For those cases where additional loci do not aid in the evaluation of a match ~~or could not be obtained, but the profile has Y-STR data~~, the databasing laboratory may perform Y-STR testing on the offender sample. The results of this testing will be added to ~~the LDIS laboratory to aid in the evaluation of a match~~ CODIS. ~~This type of testing may be done on approval of the State CODIS Administrator or Alternate.~~

6 Hit Disposition

Once a match has been reviewed, the casework laboratory will disposition the candidate match. SDIS will disposition a match on the state side associated with an offender sample to 'Pending' until contacted by the casework laboratory regarding the disposition to be used with the match. Below is a list of the most common dispositions used at Ohio SDIS with casework laboratories; reference the NDIS procedures for additional dispositions as needed.

Table 6. Common dispositions used at SDIS in Ohio.

Disposition	Definition
Arrestee Hit	A match between an arrestee's DNA record and the DNA record from a forensic sample in an unsolved forensic case where it aids the investigation.
Benchwork Match	Benchwork Matches occur when forensic cases are linked BEFORE entry into CODIS and also matched by CODIS. When CODIS makes the association, no new information or assistance is provided to the investigation.
Candidate Match	A possible match between two or more DNA records reported by CODIS software after a search. This is an interim disposition and laboratories must assess each candidate match to disposition appropriately.

Conviction Match	A Conviction Match occurs when CODIS matches a forensic DNA record to a DNA record from an offender or suspect, but the crime from which the evidence was collected has already been solved or the match does not aid the investigation in any way. The forensic lab must communicate the demographic information of their known individual to ensure it is the same as the matching individual.
Duplicate	The same match is already in the database (same Candidate and Target DNA profiles). Used in cases where a duplicate offender sample matches the same forensic record in a single search.
Forensic Hit	A match between an unsolved forensic record or to a solved/unsolved forensic record from another case. The match is considered a forensic hit if the match aids the investigation in some way.
Investigative Information	This disposition is used as a generic category for matches that do not provide probative information and/or does not readily fit the other disposition categories.
Insufficient Data	This missing person disposition is used following a match or rank when the combination of metadata and genetic information is lacking in either quantity or quality to either confirm or refute kinship or issue a report to law enforcement.
No Match	The two DNA records were determined not to result in a hit.
Offender Duplicate	A match made between two offender records t~~hat does not provide probative information.~~
Offender Hit	A match between a convicted offender's DNA record and the DNA record from a forensic profile in an unsolved forensic case where it aids the investigation.
Pending	Pending is an intermediate disposition, indicating that the Candidate Match is in the process of being confirmed or refuted.
State User Defined 3	A disposition to be used with unsolved forensic record and a suspect record.
State User Defined 5	A disposition to be used with an unsolved forensic record with multiple matches in the database at the state level or local level but cannot be interpreted because it is a complex mixture or is determined to be too partial.
Twins	This disposition is used when it is believed that a match involves two individuals that share the same DNA profile and are believed to be the result of the same pregnancy.
Waiting for more data	This disposition is an intermediate missing person disposition, indicating that additional genetic analyses and/or metadata evaluation is being conducted to confirm or refute a match or rank. It may be also used for an LDIS lab awaiting additional loci testing.

Convicted Offender or Arrestee Disposition (Offender Confirmation Request) for Ohio SDIS

An offender confirmation request may be received via e-mail, fax, or other form of written communication. At a minimum, this ~~confirmation~~ request should contain the match identification number, the offender specimen ID, the casework specimen ID, case type, and date of offense. An exception is made for BCI LDIS laboratories. Once a BCI laboratory updates the disposition to a convicted offender or arrestee hit, the confirmation process will be initiated ~~at the Ohio SDIS lab~~.

~~For an offender confirmation request,~~ The following steps should be taken before the release of the written notification of the offender's demographic information:

- The qualifying offense for the offender from the DNA Collection Form shall be checked against the CCH (Computerized Criminal History). If the qualifying offense cannot be identified, a different qualifying offense will be identified or the paperwork will be noted that a qualifying offense may not be found.

- The fingerprint(s) collected with the sample shall be checked against the master ten-print card, for that individual. If no ten-print card is available, the Identification Quality Assurance section will be notified.
- The offender sample will be reanalyzed with the current procedures to confirm the DNA profile, if the offender does not have a duplicate sample in the system. If new loci are developed upon reanalysis that meet laboratory threshold criteria, these loci will be added to CODIS.
    - For duplicate samples in the system, both profiles must have the same DNA type at all duplicate loci and the thumbprint from both collections are verified back to the same BCI ten-print card. If both prints collected with the samples cannot be verified, the samples will be reprocessed. If only one print cannot be verified, the sample with the verified print should be reprocessed.

Not obtaining a complete DNA profile for the reanalysis sample does not invalidate the release of the offender information.

A written investigative lead letter will be sent to the ~~LDIS~~ *casework* laboratory upon completion of the confirmation process. If the offender confirmation request was from a BCI laboratory, the letter will be addressed to the law enforcement agency that submitted the evidence and the prosecutor carbon copied. All other confirmation letters will be written to the requesting ~~the confirmation~~ laboratory.

The state laboratory shall make a good faith effort to confirm the offender sample within 30 days of receiving the request.

Rush Confirmation:
A verbal release of an offender's information shall be given upon written request for those cases involving a potential public safety issue. The thumbprint or fingerprints associated with the offender sample ideally will have been verified against the BCI ten-print master card. If print verification cannot be performed, the offender's demographic information shall be verified using the criminal history or other law enforcement databases. The identifying information for the offender may then be released.

Conviction Match Disposition for Ohio SDIS
A disposition of a conviction match will be made when the name of the individual is provided to SDIS by the *casework* ~~local~~ laboratory. This name must match the name the SDIS laboratory has on file or a known alias listed on the offender's Computerized Criminal History (CCH). Other demographic or fingerprint information may be used in determining if the individual for both labs is the same person.

In cases where no resolution of the information can be concluded, the offender sample will be confirmed and a written investigative lead letter will be issued.

No Match Disposition for Ohio SDIS

The SDIS laboratory will query Match Manager for "No Match" dispositions to Ohio offender samples and update the SDIS disposition. Labs do not need to notify the SDIS laboratory about no match dispositions, unless it involves the testing of an offender for additional loci or a match that was originally dispositioned as a convicted offender or arrestee hit and information has been released to Law Enforcement Agency (LEA)).

~~It is recommended that the individual match ID numbers are verified on the casework side when updating a disposition, including, but not limited to, bulk disposition of a "no match."~~

SDIS will contact the *casework* ~~LDIS~~ laboratory when a disposition of "No Match" has been set for a High Stringency match.

Casework Information Exchange for Forensic Hits & Investigative Information

Casework Laboratories ~~LDIS~~ exchange *case* information as a result of Forensic Hits and Investigative Information Dispositions.

- Forensic Hit information should be exchanged in a timely manner. When a Forensic Hit involves an unsolved case, before the suspects name is released, the supporting documentation must be reviewed and documented.
- Case~~work~~ information exchanged for an Investigative Information Disposition should be communicate to the law enforcement agencies. This information may be communicated through a phone call, email or letter.

7 Overdue Match Dispositions

At times, the dispositions of the matches in CODIS are not the same for both the target and candidate. For example, a candidate may have their side dispositioned as Conviction Match and the target side indicates the match is dispositioned as Pending. ~~Once a month~~, *As needed and as staffing allows*, SDIS database should be queried for Overdue Dispositions. The dispositions will be researched and sorted between the various laboratories and notification will be sent to the local laboratory to update their disposition. It is the responsibility of the local laboratory to research, respond, and update the overdue disposition.

In rare instances, a disposition cannot be updated due to circumstances such as the match was deleted, the original sample was deleted, or the lab's ORI is no longer in existence. *Contact the CODIS help desk for assistance with these matches*. ~~A log of these overdue dispositions is maintained. These dispositions do not need to be reviewed each month. A record of overdue dispositions and the notifications are maintained.~~

8 Collection of Offender Samples

The requirement of identifying persons with a qualifying offense and collecting the sample is placed on the collection agencies.

Ohio Revised Code

Samples are collected by local Law Enforcement Agencies *(LEA)* throughout the state of Ohio as defined by the Ohio Revised Code (ORC). The ORC 2152.74 provides authority to those law enforcement agencies to collect a DNA sample from adjudicated delinquent juveniles and ORC 2901.07 allows for the collection of adults arrested for a felony offense, adults convicted of a felony offense and adults convicted of certain misdemeanors.

Computer Criminal History Flag

If the person's identity has been verified, the LEA may check the person's Ohio Computerized Criminal History (CCH) if present. If the CCH indicates a sample has been collected, the agency does not have to collect a second sample. See OAC (Ohio Administrative Code) 109:5-5-01 and 109:5-5-02.

DNA Collection Kits and Postage

BCI provides collection kits and postage at no cost to the collection agencies, per the ORC. The collection kit consists of all the items required to collect a sample for the Ohio database and return it to BCI either as individual sample or in bulk.~~an instruction sheet, DNA collector, database collection card, transport pouch, and a pre-addressed and prepaid return mailing envelope. Pre-paid addressed labels from Fed-Ex may also be provided for agencies to return samples in bulk to BCI.~~

DNA Collection Training

BCI provides access to on-line training for the collection of offender samples. Instructor-led training may be requested by an agency, but individuals must have completed the computer-based training first.

Negative DNA Flag Report

This report is run in OHLEG by the collection agency to help monitor collection of adult felony arrestees from their agency. The report identifies individuals that were in custody for a felony arrest, but the individual's DNA sample was not received or processed successfully by BCI. A successful collection is one where the DNA flag for the individual's CCH is updated to a positive statement of "DNA is registered in the Ohio Offender Databank."

9 Accessioning of Offender Samples

Offender samples are received through mail or FedEx delivery to BCI-London, Ohio, location. The date of receipt of a sample is the day the mail or FedEx box was received *at BCI*. This date is recorded in the demographic database.

All samples received by BCI pursuant to ORC 2152.74 and 2901.07 are assumed to have been collected in good faith by law enforcement agencies.

Samples and accompanying paperwork are assigned a unique identifier during accessioning. The accessioning process includes: collection quality assessment, data entry of the

demographic information from the DNA collection card, and assignment of a unique identifier (aka offender number). The accessioning procedures may be found in the CODIS Admin Staff Procedures manual.

Collection Errors

Samples received will be screened for errors that prohibit their processing or limit their value for future verification. The following collection errors result in sample failure and recollection will be requested:

a. The name on the DNA collection form and the buccal DNA collector label do not correspond
b. No thumbprint/fingerprint or an unacceptable thumbprint/fingerprint
    Note: These may be processed, but a notation made in the demographic record. A request for a new sample will be made to the agency.
c. No name on DNA collection form or label on the collector
d. Multiple collectors in the same envelope
e. Multiple DNA collection forms in the same envelope
f. No collector or DNA collection form submitted

Agencies that have submitted a sample that possess any of the above-mentioned errors are notified by BCI. The reason the sample failed and request for recollection of the sample is made to the original collection location. Notification of the recollection request to the law enforcement agency is maintained in a log. If the offender sample has a duplicate in the system, notification is not made.

Starting on December 5, 2014, if a sample has a failed thumbprint, missing thumbprint, or has the collector's name on the handle, the sample will still be sent for recollection, but will be accessioned with a client case number = failed, thumbprint = no, and the BCI number (if present) will be placed in the comments.

Duplicate Samples

An offender sample received by BCI does not need to be processed if it already has a duplicate collected and entered in the system. A **duplicate** is a new sample received by the laboratory, but a sample with the same name, DOB, and BCI number is already in COD and has all of the following criteria:

- Has a positive DNA flag for the individual's CCH.
- The sample was received in the past 5 years. For example, a sample received in 2021 has a sample from 2018 in the system. The 2021 sample is considered a duplicate. If the sample was received in 2015, the 2021 sample is NOT considered a duplicate.
- The demographic information is the same.
- The "Profile In CODIS" field is marked yes.

10 Storage of Offender Samples

The DNA collection cards and offender samples are stored separately at BCI according to their offender number and batch number. Under R.C. 109.573(H) (2), the BCI superintendent is responsible for maintaining and preserving the DNA samples.

Offender samples that pass DNA analysis are retained for quality assurance, sample confirmations and future forensic DNA testing as needed. Failed samples may be destroyed and the record removed from the database that links the unique offender number to the offender's demographic information.

The DNA profiles generated from the offender samples are stored in Specimen Manager in the CODIS software on the SDIS server. The electronic data generated by the BCI DNA analysis laboratory is stored at BCI according to the data package or the First Run project number.

11 Use and Disclosure of Offender Samples

The use and disclosure of offender samples are outlined in the Ohio R.C. 109.573. The Federal DNA Act defines limited access and disclosure of DNA samples and DNA analysis. The more restrictive provision must be followed whether it is the Federal DNA Act or the Ohio Revised Code. Additional information regarding the Federal DNA Act may be found in the NDIS Operational Procedures. The FBI's Quality Assurance Standards also require confidentiality: see Forensic QAS Standards 11.3.1 and 11.3.3 and Databasing QAS Standards 11.3.1, 11.3.2 and 11.3.3.

Ohio Revised Code

Ohio R.C. 109.573 (B) (2): If the bureau of criminal identification and investigation establishes and maintains a DNA laboratory and a DNA database, the bureau may use or disclose information regarding DNA profiles for the following purposes:

a. The bureau may disclose information to a law enforcement agency for the administration of criminal justice.

b. The bureau shall disclose pursuant to a court order issued under section 3111.09 of the Revised Code any information necessary to determine the existence of a parent and child relationship in an action brought under sections 3111.01 to 3111.18 of the Revised Code.

c. The bureau may use or disclose information from the population statistics database, for identification research and protocol development, or for quality control purposes.

Public Record

Ohio R.C. 109.573 (E): "DNA profiles, DNA specimens, fingerprints, and photographs that the bureau of criminal identification and investigation receives pursuant to this section and sections 313.08, 2152.74, 2901.07, and 2933.82 of the Revised Code and personal identification information attached to a DNA record are not public profiles under section 149.43 of the Revised Code."

Requests Regarding if an Individual is in the Ohio Database

A request regarding whether an individual is in the Ohio database must be received in writing from a Law Enforcement Agency on letterhead or using an e-mail with an address showing the agency (i.e. @sylvaniapolice.com). It is recommended that a copy of the request is saved to the offender's notes when possible. If the agency is from Ohio, it is recommended they check the offender's rap sheet (CCH) first.

Information inquiries by a collection agency regarding the collection status of a particular individual they submitted shall be handled on a case-by-case basis. It is recommended they check CCH first.

Disclosure of Matches

The disclosure of non-confirmed matches is not allowed whether at LDIS, SDIS, or NDIS. Direct disclosures of NDIS profiles are authorized to the federal, state, and local criminal justice agencies who participate in NDIS. These direct disclosures would include access to the DNA record contributed to NDIS if a potential match is identified. An indirect disclosure of a DNA record is permitted to law enforcement agencies for criminal identification purposes via the release of information to a law enforcement agency following the confirmation of a match.

For post-conviction cases and other cases in which information is requested, it is important to disclose directly to appropriate law enforcement agency, prosecutor, or court.

Offender Samples for Use in a Criminal Case

The samples collected and analyzed for the DNA database are intended only to point to a probable suspect. If possible, a second DNA sample must be obtained from the suspect in a criminal investigation and submitted to the crime laboratory for use as evidence in the prosecution of a case.

If an offender is deceased, the DNA record may be provided to the *law enforcement agency/crime laboratory* ~~crime laboratory~~ upon written request for a direct comparison to an evidence DNA profile.

Offender Samples for Use with Missing Person and Unidentified Human Remains (UHR):

Offender samples may be used to develop a DNA profile for entry, upload, storage and searching in CODIS and for reporting comparison when:

- UHR are found and are believed to belong to offender X.
- The MP is believed to be offender X.

The offender sample first must have the fingerprint(s) collected with the sample confirmed to a BCI or FBI identification number.

12 Removal of an Offender DNA Profile from CODIS

An Ohio DNA record collected for the CODIS database may be removed from the CODIS system in response to a court order, in accordance to Federal ~~or~~ *and* state law.

Federal Law

Per Federal law 42 U.S.C. § 14132(d) (2) (A) (ii), an offender DNA profile will be removed if a certified copy of a final court order is received by the CODIS laboratory indicating any of the following: 1) that a qualifying charge has been dismissed; 2) that criminal proceedings occurring as a result of a qualifying offense have resulted in an acquittal; or 3) that no charge was filed within an applicable time period.

State Law and Administrative Removal

Per state law R.C. 2953.52 DNA samples collected pursuant to the ORC shall remain on record unless BCI receives a certified copy of a final court order that decrees otherwise. DNA samples shall ~~also~~ be maintained if a qualifying offense on the offender's CCH is different than the qualifying offense on the final court order or it is determined that the individual has an additional CODIS qualifying offense.

An offender DNA profile may be removed from the CODIS software if any of the following apply:

a. The collection agency notifies the CODIS laboratory in writing that the sample was taken in error.
b. There was a procedural deficiency in the collection of a DNA sample that cannot be resolved. The deficiency must be documented in writing.
c. The retention of the DNA profile has expired. See the DAS website for the retention schedule.

Steps for Removing an Offender Sample

A removal may be performed by personnel assigned to the CODIS unit or working under direction of the CODIS Laboratory Manager. The removal of an offender's sample shall involve the following steps:

- The offender's Computerized Criminal History (CCH) will be verified to ensure the offender has not been convicted or arrested for another qualifying offense which would otherwise authorize the retention of the offender sample in the CODIS database.
- If a DNA profile is deemed ineligible for removal, this information shall be recorded and the court notified.
- The DNA record shall be removed from the CODIS system.
- The laboratory shall destroy the physical sample, stamp the DNA collection form with expunged and delete the CODIS sample from the Laboratory Information Management System.

The NDIS custodian does not need to be notified of the removal of an offender DNA profile.

Requesting Verification of DNA Record Destruction

An affidavit is required setting forth the requester's name, address, date of birth and last four digits of the social security number. The affidavit shall ask BCI to check its profiles for whether a DNA sample is present for an individual matching the requestor's information. The laboratory

will respond with the date the system was checked and whether or not a DNA record is present in the system for the requestor.

13 Removal of Casework or LINK records from CODIS Software

Removal of Casework Records from CODIS

The removal of a casework DNA record from CODIS as a result of a LEA or prosecutor contacting the laboratory requires a case conversation entry. If the laboratory initiates the removal of a casework profile from CODIS, the laboratory must communicate this information to the investigating law enforcement agency or prosecutor. This communication may occur through a phone call, email, letter *or report* and this communication must be documented.

Casework DNA profiles must be removed if a standard or CODIS hit identified the forensic unknown as coming from an elimination standard or victim.

Removal of LINK Records from CODIS

Project LINK (Linking Individuals Not Known) is a BCI term used to describe the resources offered to LEA when unidentified human remains (UHR) are found and for agencies or families searching for a missing person. The UHR, MP and Relative of MP are referred collectively as LINK samples/records.

If identification has been made and the remains found were complete, the DNA records in CODIS should be removed. LINK records are to remain in CODIS after an identification is made if the following apply:

- A complete set of remains was not found. The standard for completeness has been met when the majority of remains were found, no long bones or skull are missing.
- If SDIS, LDIS, or CIU are unable to obtain information from the Coroner's Office or LEA as to the completeness of the remains.

For samples remaining in CODIS after an identification has been made, the source ID should be updated to "Yes". Note in the specimen comments and in the laboratory case conversation why the LINK record was not removed.

A relative of a Missing Person (including spouse) voluntarily provides a sample to help identify a person who is missing. This sample shall be removed from the system if:

- the Missing Person is found (if partial remains, the record may remain in CODIS to aid in identification of additional remains)
- it is determined the person is not related to the MP
- at the written request from the relative of the MP

14 CODIS Software Maintenance

The state and local laboratories with CODIS software must be compliant with the FBI security requirements *and MOU with the FBI.* The security document is a law enforcement sensitive document.

Data at the state level is automatically backed up each night and is stored off site. Each business day, the backup is checked by IT to ensure that it has been completed successfully.

Configuration changes of the CODIS network should be made in consultation with the State CODIS Administrator. Any changes must receive approval from the FBI and/or FBI contractor.

15 Familial Searching

Familial searching (FS) is a way of extending the utility of the offender DNA database to create investigative leads for cases of violent crimes or other qualifying offenses, by utilizing the similarities between the DNA profiles of related individuals. A familial search does not identify the individual whose DNA matches the evidence DNA profile; however, it may be useful in identifying a first-generation male relative to the evidence DNA profile. This evidence DNA profile is foreign to the victim and is presumed to be the suspect's DNA profile.

For example, a DNA profile is developed from blood evidence left at a homicide scene and a search of the evidence profile in the CODIS database does not result in a match. However, searching for DNA profiles that are similar to, but not an exact match, may identify possible first-degree male relatives to the evidence (father, son, brother). The list of potential relatives to the evidence DNA profile can then be narrowed by performing Y-STR DNA testing *on the offenders* ~~by comparing the Y-STR results to those obtained from the~~ *to compare against Y profile from the* evidence. Further narrowing of the *list* may be possible by reviewing demographic data, criminal history, residential locations and so on. ~~The pool may be narrowed to zero, one, two, or more potential relatives to the evidence DNA profile.~~ The individual whose name(s) are provided to the LEA as a *result of a Y match, is NOT the person of interest (POI)* ~~not the source of the evidence DNA profile in the case~~, but only a possible relative.

It is critical any lead identified through Y-STR testing results in additional investigation by law enforcement. It must be determined whether the individual has close family members that may have had the opportunity to commit the crime. If a potential *POI* ~~suspect~~ is identified, that *individual's* DNA sample must be collected and submitted to the laboratory for a comparison to the evidence DNA profile ~~using autosomal testing~~. *Initially, this sample should be a* ~~This does not have to be a direct sample, but may be a~~ secondary covert sample from the individual, such as, a cigarette butt, drinking glass, etc.

If the search was to identify an Unidentified Human Remain (UHR), a family tree will be ~~developed~~ *constructed*. ~~to narrow the pool of individuals.~~ If a family member is found to be missing, an additional sample from a different relative may not be needed for comparison.

Other testing, such as dental records or medical devices from the UHR may be used to verify the identity -or- no additional testing will be needed.

Limitations

This type of investigative tool ~~investigative lead~~ is subject to a number of limitations:

- A familial search may only be successful if a first-degree relative of the evidence DNA profile is in the database. A "first-degree relative" is a sibling, parent, or child, not an uncle or cousin.
- This type of search only works for males, and will be utilized if the evidence DNA profile or UHR are males.
- The "kinship index" used to produce the list of potential relatives is based on a statistical calculation involving shared alleles and allele frequency. This list could result in thousands of potential relatives, which would prohibit the laboratory from testing the entire list. The results list is prioritized, and may only be successful if the potential relative is prioritized high enough on this list to be selected for additional Y-STR testing.
- The potential relative(s) to the individual whose name is released may not be identifiable through a law enforcement records search.
- Y-STR profiles can be shared by a significant number of males in a given community. A consistent Y-STR profile between a potential relative and the evidence DNA profile does not confirm relatedness. This information shall only be considered as an investigative lead and shall be treated as an investigative lead by all parties involved.
- Due to the age of some of the database samples, a complete Y-STR profile may not be developed. When no additional Y-STR testing can be performed to show a familial link, this name may not appear on the final candidate list, *unless a parent-child relationship is suspected.*

Case Selection

A familial case selection begins with a conversation between BCI and LEA or prosecutor's office. Either the LEA or BCI may initiate the conversation.

A qualifying case must demonstrate the occurrence of a crime that is:

- Violent, it caused serious injury or death; or which demonstrates a continuing threat of imminent and serious harm to one or more members of the community; and
- Not solvable by traditional methods of criminal investigation and all other investigative leads must have been exhausted. An exception to these criteria may be made by the BCI Superintendent for a matter of extreme public safety.
- Human remains may be searched when their identity is unknown and whose death is suspected to have been a result of a violent assault against the decedent.

The evidence DNA profile or unidentified human remains should have the following qualities:

- A complete thirteen CODIS core locus autosomal DNA profile (partial DNA profile of 10 original core loci may be considered)
- A single source or fully deduced single source DNA profile in CODIS;
- A DNA profile that was developed by an accredited laboratory;
- A DNA profile that is currently in CODIS and has been searched at NDIS and SDIS;
- A 15-locus Y-STR profile (non-rapid mutating loci); and
- The DNA profile must be associated with a crime committed in Ohio.

Application and MOU

A written application should be completed to include the law enforcement agency's contact information, case facts and a statement of how the case meets the selection criteria. The familial committee consisting of individuals from lab management, the cold case unit, criminal intelligence unit and BCI administration will determine which cases are searched and in what order once a complete application has been received and found to meet all the requirements for a familial search. Once a case has been selected for FS within the next 3 months, a memorandum of understanding (MOU) will be executed and is to be signed by all law enforcement agencies involved. This MOU requires the law enforcement agency to follow up on any investigative leads provided. The parties involved must understand the limitations of the familial testing and the privacy requirements regarding any name released to the agencies. Once an MOU is received a familial search may be initiated.

Frequency of Familial Searches

If no matching Y-STR profile is identified to the evidence, negative results are reported to the agency. A request may be made after 12 months or if there is an extenuating circumstance for an additional search. BCI reserves the right to deny a request due to lack of resources.

Confidentiality

Because familial searching does not generate a direct association between the evidence DNA profile/UHR and the offender, it is of the utmost importance to safeguard information obtained because of the search. The results of the familial search and subsequent Y-STR testing for familial will be released only on a need to know basis. Only law enforcement personnel who have a direct involvement in the investigation of the case shall be permitted to have this information.

Reporting Results

Names of potential relatives on the list shall not be released prior to having Y-STR testing performed by the laboratory~~. Only those potential relatives whose Y-STR profile is consistent with that of the evidence Y-STR profile will be considered for release.~~

All communications regarding a positive or negative familial search result will be in writing.

Negative Result

When no investigative lead is identified, a letter will be sent notifying the requesting agency of the negative search result.

Positive Result

If a potential investigative lead is determined ~~based on a Y-STR result~~, the thumbprint captured when the DNA sample was collected for the database will be verified and the CODIS qualifying offense will be checked. If Y-STR profiles are consistent, BCI reserves the right to review non-DNA information in order to identify additional evidence showing relatedness, if available.

The Criminal Intelligence Unit (CIU) will initiate a background investigation on the potential relative (with the consistent Y-STR) to determine their first-degree relatives. The first-degree relatives will be compared to the case facts to determine if they may be excluded based on age at the time of the crime/date the UHR was found, location of residence, or any other known factors.

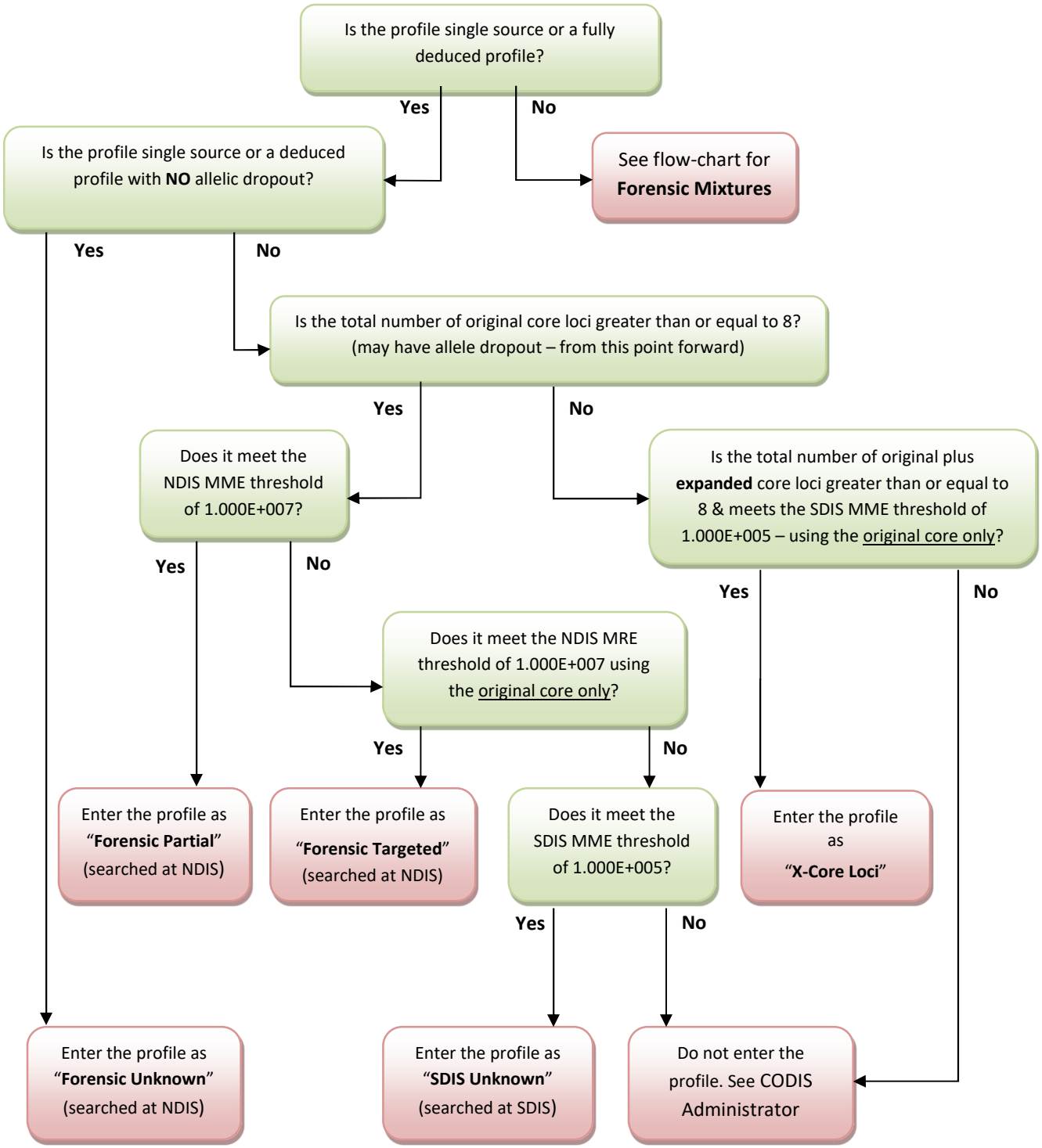
As necessary, once the CIU has completed the background check of the potential relative and their first-degree relatives, the names will be released by BCI to the requesting agency by means of a phone call or an in-person meeting. At the time the name(s) are released, BCI and the requesting agency shall discuss the limitations of the investigative lead, precautions to be taken, appropriate communications about the lead, and so forth. BCI will be available to answer questions as the investigation progresses.

16 YSTR testing on Ohio Offender Samples ~~Other~~

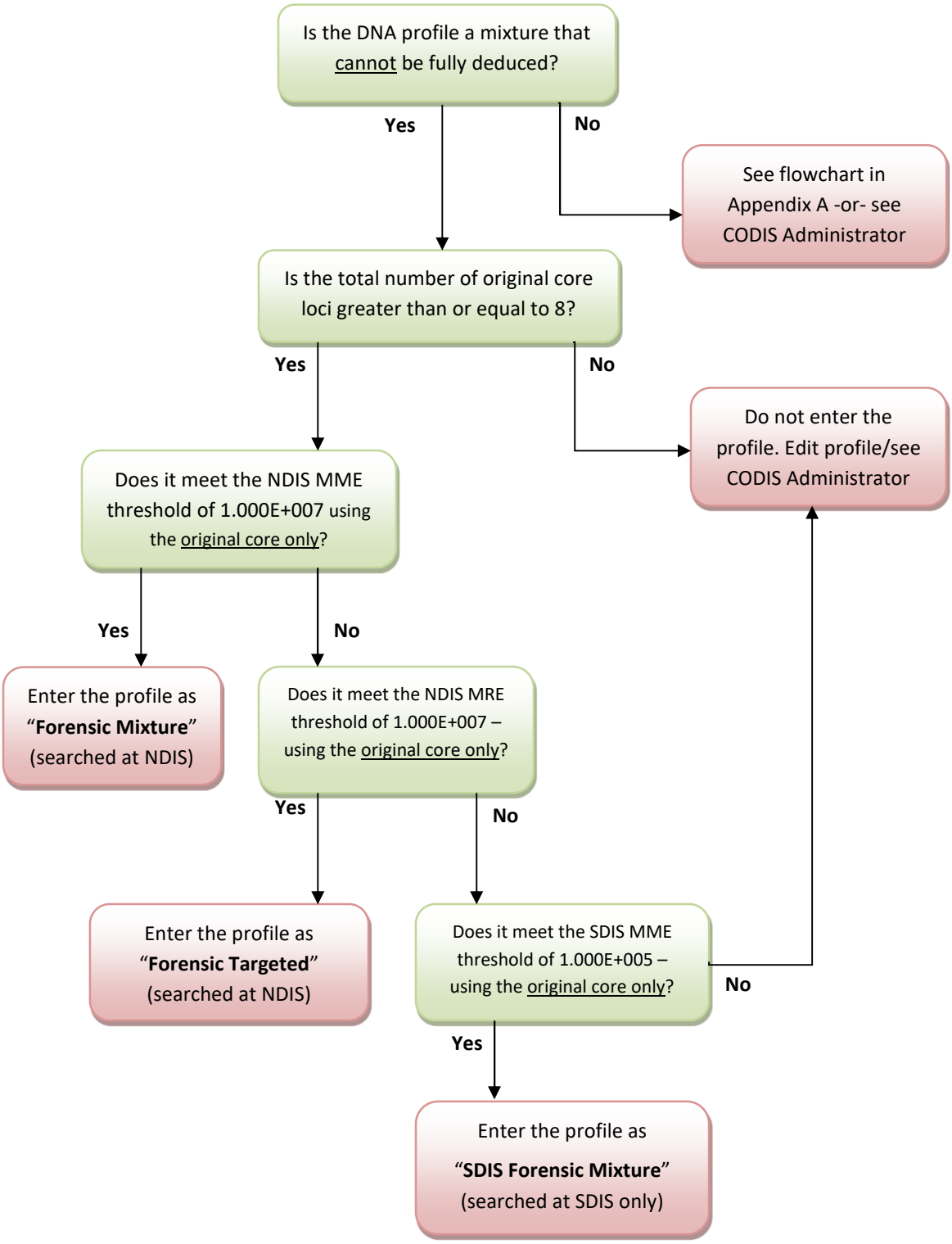
Requests may be made on a case-by-case basis for furtherance of a criminal investigation to have Y-STRs performed on an offender sample for comparison to evidence sample with Y-STRs or to confirm parental lineage. These requests must be received in writing from a law enforcement ~~government laboratory~~. The criminal investigation is a major crime involving a sexual assault, kidnapping, homicide or terrorism related case. BCI reserves the right to deny a request due to lack of resources or request payment by the laboratory.

The YSTR profile will be compared using searcher and a hit notification will be issued if a positive association is identified.

Appendix A: Determination of Forensic Profile Specimen Category



Appendix B: Mixture Sample Flowchart for Forensic Specimen Category Entry



Appendix C: State Search Configurations Involving Forensic Specimens

Search Configuration: **BCI Single Source**

Configuration	Index(es) to Search In
General • Return All Candidates	Arrestee against Forensic, Forensic Partial, Forensic Targeted, Incomplete, Missing Person, SDIS Forensic Unknown & Unidentified Human (Remains) Forensic against Arrestee, Forensic, Forensic Partial, Forensic Targeted, Missing Person, Offender, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Forensic Partial against Arrestee, Forensic, Forensic Partial, Forensic Targeted, Missing Person, Offender, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Forensic Targeted against Arrestee, Forensic, Forensic Partial, Forensic Targeted, Missing Person, Offender, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Missing Person against Arrestee, Forensic, Forensic Partial, Forensic Targeted, *Offender*, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Offender against Forensic, Forensic Partial, Forensic Targeted, Missing Person, SDIS Forensic Unknown & Unidentified Human (Remains) Relatives of Missing Person against Unidentified Human (Remains) SDIS Forensic Unknown against Arrestee, Forensic, Forensic Partial, Forensic Targeted, Missing Person, Offender, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Suspect against Forensic, Forensic Partial, Forensic Targeted, Missing Person, SDIS Forensic Unknown & Unidentified Human (Remains) Unidentified Human (Remains) against Arrestee, Forensic, Forensic Targeted, Forensic Partial, Missing Person, Offender, Relatives of Missing Person, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains)
STR • Minimum # of Loci Required to Report a Match: 8 • Include Candidate Specimens that Match on All but ___ Loci: 1	
mtDNA • None	
Y-STR • None	
AutoSearcher Mode • Standard	
Specimens to Autosearch • Specimens Not Previously Searched *(Unless the monthly all specimen search)*	
Match Reports • Automatically Send Match Reports to Remote Labs	

Search Configuration: **BCI Mixture**

Configuration	Index(es) to Search In
General • Return All Candidates STR • Minimum # of Loci Required to Report a Match: _8_ • Include Candidate Specimens that Match on All but ___ Loci: _0_ mtDNA • None Y-STR • None AutoSearcher Mode • Standard Specimens to Autosearch • Specimens Not Previously Searched Match Reports • Automatically Send Match Reports to Remote Labs	Arrestee against Forensic Mixture, SDIS Forensic Mixture & SDIS X-Core Loci Forensic against Forensic Mixture, ~~Targeted,~~ Multi-Allelic Offender & SDIS Forensic Mixture Forensic Mixture against Arrestee, Forensic, Forensic Mixture, Forensic Partial, Forensic Targeted, Missing Person, Multi-Allelic Offender, Offender, SDIS Forensic Mixture, SDIS Forensic Unknown, Suspect & Unidentified Human (Remains) Forensic Partial against Forensic Mixture, Multi-Allelic Offender & SDIS Forensic Mixture. Forensic Targeted against Forensic Mixture, Multi-Allelic Offender & SDIS Forensic Mixture. Missing Person against Forensic Mixture, Multi-Allelic Offender & SDIS Forensic Mixture Multi-Allelic Offender against Forensic, Forensic Partial, Forensic Targeted, Missing Person, SDIS Forensic Mixture, SDIS Forensic Unknown, SDIS X-Core Loci & Unidentified Human (Remains) Offender against Forensic Mixture, SDIS Forensic Mixture & SDIS X-Core Loci SDIS Forensic Mixture against Arrestee, Forensic, Forensic Mixture, Forensic Partial, Forensic Targeted, *Missing Person*, Multi-Allelic Offender, Offender, SDIS Forensic Mixture, SDIS Forensic Unknown & Suspect SDIS Forensic Unknown against, Forensic Mixture, Multi-Allelic Offender & SDIS Forensic Mixture SDIS X-Core Loci against Arrestee, Multi-Allelic Offender, ~~Convicted~~ Offender & Suspect Suspect against Forensic Mixture, SDIS Forensic Mixture & *SDIS X-Core Loci* Unidentified Human (Remains) against Forensic Mixture & Multi-Allelic Offender

Search Configuration: **Monthly SDIS Low Loci**

Configuration	Index(es) to Search In
General • Return All Candidates	Arrestee against SDIS Low Loci & SDIS X-Core Loci Offender against SDIS Low Loci & SDIS X-Core Loci SDIS Low Loci against Arrestee, Offender & *Suspect* SDIS X-Core Loci against Arrestee, Offender & *Suspect* Suspect against SDIS Low Loci & X-Core Loci **NOTE: 3 High Stringency Loci: D31358, vWA, and D8S1179**
STR • Minimum # of Loci Required to Report a Match: _5_ • Include Candidate Specimens that Match on All but ___ Loci: _0_	
mtDNA • None	
Y-STR • None	
AutoSearcher Mode • Standard	
Match Reports • Automatically Send Match Reports to Remote Labs	

Search Configuration: **Other (paternal obligate)**

Configuration	Index(es) to Search In
General • Return All Candidates	Arrestee against Other Offender against Other Other against Arrestee, Offender & Suspect Suspect against Other
STR • Minimum # of Loci Required to Report a Match: _10_ • Include Candidate Specimens that Match on All but ___ Loci: _0_	
mtDNA • None	
Y-STR • None	
AutoSearcher Mode • Standard	
Specimens to Autosearch • All Specimens	
Match Reports • Automatically Send Match Reports to Remote Labs.	

Appendix D: State Search Configurations Involving Missing Person or UHR Records. *See Appendix E for Specimen Views.*

Missing Persons Identity Search - This search is a direct comparison of DNA records to generate matches between a UHR and MP and other DNA records from known individuals and crime scenes. The results may provide an identification of the UHR, connect a MP or an investigative lead.

Search Configuration: **Missing Persons Identity**

Configuration	Index(es) to Search In
General Return All Candidates	Arrestee against Missing Person & Unidentified Human (Remains)
STR Minimum # of Loci Required to Report a Match: 7 Include Candidate Specimens that Match on All but ___ Loci: 1 Stringency of Core Loci: Moderate	Forensic against Missing Person & Unidentified Human (Remains) Forensic Partial Missing Person & Unidentified Human (Remains) Missing Person against Arrestee, Forensic, Forensic Partial, Multi-Allelic Offender, Offender, SDIS Forensic Unknown, Staff, Suspect & Unidentified Human (Remains)
mtDNA -None	
Y-STR -None	
AutoSearcher Mode Standard	Multi-Allelic Offender against Missing Person & Unidentified Human (Remains)
Specimens to Autosearch Specimens Not Previously Searched	Offender against Missing Person & Unidentified Human (Remains)
Match Reports Automatically Send Match Reports to Remote Labs	SDIS Forensic Unknown against Missing Person & Unidentified Human (Remains) Staff against Missing Person & Unidentified Human (Remains) Suspect against Missing Person& Unidentified Human (Remains) Unidentified Human (Remains) against Arrestee, Forensic, Forensic Partial, Missing Person, Multi-Allelic Offender, Offender, SDIS Forensic Unknown, Staff, Suspect & Unidentified Human (Remains)

MP to UHR with Mito or YSTR - This search is a comparison of DNA records designated to generate direct matches between the UHR and MP standard (offender sample or a direct reference sample). mtDNA and/or Y-STR records are required to be associated with both samples. *The family reference sample for a missing person and an unidentified human remain will be searched using mtDNA or YSTRs.* The results may provide an identification of the UHR or connect UHR from separate cases.

Search Configuration: ***MP** to **UHR** mito only* ~~**Rel of MP -UHR -MP -mtDNA**~~

Configuration	Index(es) to Search In
General Return All Candidates	Missing Person against Staff & Unidentified Human (Remains) *Relatives of Missing Person against Missing Persons, Staff and Unidentified Human (Remains)* Unidentified Human (Remains) against Staff & Missing Persons & Unidentified Human (Remains)
STR -None	
mtDNA Min # of Overlapping Pairs Req to report a Match: 600 Include Candidate Specimens that Match on All but_ Base Pairs: 0 Insertions at Specified Length Heteroplasmy Sites: Ignore Use as a match filter: ✓ Required to Report a Match: ✓	
Y-STR -None	
AutoSearcher Mode View	
View Mode: ~~Target: SV_MP&UHR with mtDNA~~ ~~Candidate: SV_MP&UHR with mtDNA~~ *Standard*	
Match Reports Automatically Send Match Reports to Remote Labs	

Search Configuration: ***MP** to **UHR** mito only* ~~**Rel of MP -UHR -MP YSTR**~~

Configuration	Index(es) to Search In
General Return All Candidates	Missing Person against Staff & Unidentified Human (Remains) *Relatives of Missing Person against Missing Persons, Staff and Unidentified Human (Remains)* Unidentified Human (Remains) against Staff & Missing Persons & Unidentified Human (Remains)
STR - None	
mtDNA -None	
Y-STR Minimum # of Loci Required to Report a Match: _**8** Include Candidate Specimens that Match on All but ___ Loci: 0 YSTR Loci set to High Stringency (only non-rapid mutating loci selected) Use as a match filter: ✓ Required to Report a Match: ✓	
AutoSearcher Mode View	
View Mode: Target: SV_ MP&UHR with YSTR Candidate: SV_ MP&UHR with YSTR	

Match Reports Automatically Send Match Reports to Remote Labs	

~~**Relatives of Missing Person Searches with Mito or Y-STR –** This search generates associations between the family reference sample for a missing person and a unidentified human remain. This search uses low stringency for the autosomal STR, but requires either mtDNA or YSTR to be associated with both samples.~~

~~Search Configuration: **Relatives of MP to UHR mito**~~

~~Configuration~~	~~Index(es) to Search In~~
~~General~~ ~~Return All Candidates~~	~~Relatives of Missing Person against Missing Persons, Staff and Unidentified Human (Remains)~~
~~STR - None~~	
~~Minimum # of Loci Required to Report a Match: 8~~ ~~Include Candidate Specimens that Match on All by _ Loci: 0~~ ~~STR Loci set to Low Stringency~~ ~~Use as a match filter:~~ ✓ ~~Required to Report a Match:~~ ✓	
~~Y-STR - None~~	
~~AutoSearcher Mode~~ ~~View~~	
~~View Mode:~~ ~~Target: SV_RelofMP with mtDNA~~ ~~Candidate: SV_MP&UHR with mtDNA~~	
~~Match Reports~~ ~~Automatically Send Match Reports to Remote Labs~~	

Pedigree Searches

Pedigree searches are used to generate an association between a Relative of a MP and an UHR. Usually multiple relatives are added to a Pedigree Tree. A Pedigree Tree search is threshold based and a Combined Likelihood ratio is used to filter out fortuitous associations.

Standard Pedigree Search (Ped_UHR_LRComb 1000) - For this search the Pedigree Tree is required to have 2 relatives typed with STRs to be searched against the UHR. The results may provide an identification to the UHR. The minimum LHR is only a 1000.

Search Configuration: **Ped_UHR_LRCom1000 / and 3 or more untyped nodes**

Configuration	Index(es) to Search In
General Return All Candidates Use Metadata Sex as Rank Filter ✓ Combined Pedigree Likelihood Ratio Threshold: 1.00+3	Pedigree Tree against Unidentified Human (Remains)

STR Minimum # of Loci Required to Report a Rank: _1_ Use as a Rank Filter ✓ Required to Report Rank: ✓ Joint Pedigree Likelihood Ratio Threshold: 1.00 E+00	Single Type Node against Unidentified Human (Remains)
mtDNA Min # of Overlapping Pairs Req to report a Match: 600 Include Candidate Specimens that Match on All but_ Base Pairs: 0 Insertions at Specified Length Heteroplasmy Sites: Ignore Use as a rank filter: ✓ Required to Report a Match: unchecked Likelihood Ratio Threshold: 0.00 E+00	
Y-STR Minimum # of Loci Required to Report a Rank: _1_ Required to Report Rank: NOT Checked Use as a Rank Filter ✓ Likelihood Ratio Threshold: 0.00 E+000	
View Mode: Target: SV _3 or more untyped nodes Candidate: SV_Unidentified Human Remains for PT Search	
Match Reports Automatically Send Match Reports to Remote Labs.	

Single Typed Node Pedigree Tree (STN_UHR_LRComb 10,000) - This search utilized the Pedigree Tree with a single relative with STRs to search against a UHR. The minimum combined LHR is set to 10,000 because only one relative is present.

Search Configuration: **STN_UHR_LRComb10,000**

Configuration	Index(es) to Search In
General Return All Candidates Use Metadata Sex as Rank Filter ✓ Mar Combined Pedigree Likelihood Ratio Threshold: 1.00+4	Pedigree Tree against Unidentified Human (Remains) Single Type Node against Unidentified Human (Remains)
STR Minimum # of Loci Required to Report a Rank: _1_ Use as a Rank Filter ✓	

Required to Report Rank: ✓ Joint Pedigree Likelihood Ratio Threshold: 1.00 E+00	
mtDNA Min # of Overlapping Pairs Req to report a Match: 600 Include Candidate Specimens that Match on All but_ Base Pairs: 0 Insertions at Specified Length Heteroplasmy Sites: Ignore Use as a rank filter: ✓ Required to Report a Match: unchecked Likelihood Ratio Threshold: 0.00 E+00	
Y-STR Minimum # of Loci Required to Report a Rank: _1_ Required to Report Rank: NOT Checked Use as a Rank Filter ✓ Likelihood Ratio Threshold: 0.00 E+000	
View Mode: Target: SV_Single Node Pedigree Tree Candidate: SV_Unidentified Human Remains for PT Search	
Match Reports Automatically Send Match Reports to Remote Labs.	

Single Technology Pedigree Search (Pedigree to UHR with mtDNA /YSTR) - This search generates association between the relatives to UHRs that have minimal STR data. The threshold is set to a low LHR. One search uses the mtDNA and the other YSTRs.

Search Configuration: **Pedigree to UHR mtDNA Only**

Configuration	Index(es) to Search In
General Return All Candidates Use Metadata Sex as Rank Filter ✓ Combined Pedigree Likelihood Ratio Threshold: 5.00+2	Pedigree Tree against Unidentified Human (Remains) Single Type Node against Unidentified Human (Remains)
STR -None	
mtDNA Min # of Overlapping Pairs Req to report a Match: 600 Include Candidate Specimens that Match on All but_ Base Pairs: 0 Insertions at Specified Length Heteroplasmy Sites: Ignore Use as a rank filter: ✓ Required to Report a Match: unchecked Likelihood Ratio Threshold: 1.00 E+00	
Y-STR -None	
View Mode: Target: SV_Pedigree Trees with mtDNA Candidate: SV_UHR with mtDNA	
Match Reports Automatically Send Match Reports to Remote Labs.	

Search Configuration: **Pedigree to UHR YSTR Only**

Configuration	Index(es) to Search In
General Return All Candidates Use Metadata Sex as Rank Filter ✓ Combined Pedigree Likelihood Ratio Threshold: 5.00+2	Pedigree Tree against Unidentified Human (Remains) Single Type Node against Unidentified Human (Remains)
STR -None	
mtDNA -None	
Y-STR Minimum # of Loci Required to Report a Rank: _1_ Required to Report Rank: ✓ Use as a Rank Filter ✓ Likelihood Ratio Threshold: 1.00 E+000	
View Mode: Target: SV_Pedigree Trees with Y-STR Candidate: SV_UHR with Y-STR Only	
Match Reports Automatically Send Match Reports to Remote Labs	

Appendix E: Specimen Views for State Searches Involving Missing Person or UHR Records

Specimen View (all start with SV)	Tab Name	Selection(s)	Tab Name	Selection(s)
MP&UHR with mtDNA	General Criteria	Index – Missing Person, Staff, Unidentified Human (Remains)	DNA Typing System (mtDNA tab)	Assigned Date- >01-01-2020
MP&UHR with YSTR	General Criteria	Index – Missing Person, Staff, Unidentified Human (Remains) & Number of Y-STR Loci - > 2		
RelofMP with mtDNA	General Criteria	Index – Relatives of Missing Person & Staff	DNA Typing System (mtDNA tab)	Assigned Date- >01-01-2020
RelofMP with YSTR	General Criteria	Index – Relatives of Missing Person & Staff & Number of Y-STR Loci - > 2		
UHR with mtDNA	General Criteria	Index – Unidentified Human (Remains)	DNA Typing System (mtDNA tab)	Assigned Date- >01-01-2020
UHR with YSTR	General Criteria	Index –Unidentified Human (Remains) & Number of Y-STR Loci - > 2		
Unidentified Human Remains for PT Search	General Criteria	Index – Unidentified Human (Remains)		

Appendix F: State Search & Upload Schedule

NAME OF SEARCH/UPLOAD	DAY	TIME
DAILY UPLOAD (incremental)	**M, T, W, TH & F**	**11:00 PM**
FULL UPLOAD*	**AS NEEDED**	**NA**
FORENSIC SEARCHES		
All Specimens BCI Mixture	3RD FRIDAY OF THE MONTH	11:00 PM
All Specimens BCI Single Source	2ND FRIDAY OF THE MONTH	11:00 PM
BCI Mixture	M, T, W, TH & F	2:00 AM
BCI Single Source	M, T, W, TH & F	2:45 AM
Monthly SDIS Low Loci	1ST WEDNESDAY OF THE MONTH	1:00 AM
Other (paternal obligate)	1ST WEDNESDAY OF THE MONTH	1:15 AM
Missing Person and UHR Searches		
Missing Person Identity Search	SUNDAY	10:00 PM
MP to UHR mtDNA (& Y-STR)	SUNDAY	10:00 PM
Relatives to UHR with mtDNA (& Y-STR)	SUNDAY	10:00 PM
Ped_UHR_LRComb 1000	SUNDAY	10:00 PM
Ped to UHR with mtDNA (& Y-STR)	SUNDAY	10:00 PM
Ped_UHR_LRComb1000_w 3 or more untyped nodes	4TH FRIDAY OF THE MONTH	11:00 PM
STN_UHR_LRComb 10000	SUNDAY	10:00 PM

*Ensure an Incremental Upload is performed before a Full Upload is completed.