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# Familial DNA Searching: Developing a Sustainable Process

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Meet the Presenters!



## Familial DNA Searching

“An intentional or deliberate search of the database [CODIS] conducted after a routine search for the purpose of potentially identifying close biological relatives of the unknown forensic sample associated with the crime scene profile.”

# Familial DNA Searching

- Searches the offender index at the state level (SDIS).
- Y-STRs are used to confirm paternal relationship.
- Different than a **Partial Match** discovered during a regularly scheduled search.
- Different from **Forensic Genetic Genealogy (FGG)**
  - **FGG** is law enforcement's use of DNA analysis combined with traditional genealogy research to generate investigative leads for unsolved violent crimes. This allows scientists to identify shared blocks of DNA between a forensic sample and the sample donor's potential relatives.

# BJA Grantee Considerations

- If using BJA grant funds, agencies must adhere to the DOJ Interim Policy on FGG.
- In addition, a *familial search* must be conducted (if allowed).
  - The Designated Lab Official (DLO) should advise the agency on “...the availability of other DNA technologies or techniques.” and “...any reasonable scientific alternatives to FGGs Provided

# Texas DPS CODIS Laboratory Familial Search Program

# States that Allow (or Have Allowed) Familial DNA Searching

1. Denver (Colorado) 2007
2. California 2008
3. Texas 2010
4. Virginia 2011
5. Wyoming 2011
6. Florida 2012
7. Michigan 2013
8. Wisconsin 2014
9. Utah 2014
10. Ohio 2016
11. New York (????) 2017
12. Arizona 2017
13. South Dakota 2017
14. Louisiana 2018
15. North Carolina 2019
16. Minnesota 2020
17. Kentucky 2020

Others?

# SDIS

Austin DPS  
CODIS Lab



Bexar County FSC  
Weslaco DPS  
Corpus Christi DPS  
Laredo DPS



Lubbock DPS  
Waco DPS  
El Paso DPS



UNT



Houston FSC  
Harris County IFS  
Houston DPS



Austin DPS  
Capitol Area  
DPS



Garland DPS  
Tarrant County ME  
SWIFS  
Ft. Worth PD

# Texas DPS CODIS Laboratory Familial Search Program

Texas program initiated in 2010

Which cases?

- **Unsolved homicide**
- **Sexual assault**
- Other violent crime that has **significant public safety concerns**

# Texas DPS CODIS Laboratory Familial Search Program

## Considerations for Getting Started

Sought approval through our OGC based on Texas Database Statute.

- Is it allowed/prohibited by Texas database statute?
- Did we need AG opinion?

What resources can we rely on for guidance?

- California DOJ Crime Lab
- UNT

# Texas DPS CODIS Laboratory Familial Search Program

## Considerations for Getting Started

What training and software do we need?

- Cal DOJ – Kinship Analysis (R500) through California Criminalistics Institute
- UNT – MPKin Software (original software used)
- FBI – CODIS Software

What do we need to use for validation

- Actual database samples of related individuals
- Staff family samples
- Y-STR validation
- NIST Standard Reference Family Data (SRFD)

# Texas DPS CODIS Laboratory Familial Search Program Considerations for Getting Started

## Things that are not as much of a concern anymore:

- Familial searching is now widely accepted.
- Privacy concerns are no longer an issue if the program is performed responsibly.
- No need to reinvent the wheel.

## Things that are still a concern:

- Resources – both financial and staff.
- Validation of Y-STR testing for a database laboratory.

# Texas DPS CODIS Laboratory Familial Search Program

- Familial searching is a free resource to law enforcement agencies as part of our services.
- Our priority is still focused on testing and uploading qualified individuals into the CODIS database.
- 2010 – 2019 – averaged 5 searches per year.
  - Familial Search sample testing performed by our match verification analyst.
- 2020 – 2022 – averaged 15 searches per year.
  - This created a burden on our resources and budget.

*What can we do to help alleviate (not eliminate) the burden?*

# Texas DPS CODIS Laboratory Familial Search Program

- We changed our match verification process and Familial Search process to include more scientists.
- SAKI funds were used for:
  - Overtime for analysts
  - The purchase of amplification kits
  - Each search is invoiced to the Texas Rangers and the lab is reimbursed the supply cost
- Validated the CODIS software to perform familial searches in November of 2019\*
- Validated direct amp with Y-Filer Plus\*
  - Punch into two plates for direct amp of YFP and GFE in March of 2020

\* Already in process prior to SAKI.

# Texas DPS CODIS Laboratory Familial Search Program

Total Number of Familial Searches				
	Pre-SAKI (2010-2019)	SAKI (2020-present)	Non-SAKI (2020-present)	Total
Cases	31	27	5	63
Total Searches	46	33	9	88
Invest. Aided	5	5	2	12
Success Rate by Case	16%	18%	40%	19%
Success Rate by Search	11%	15%	22%	14%

# Texas DPS: Familial Searches

- Requests for Familial Searching
  - Directed to Texas State CODIS Administrator.
  - Submitted by CODIS Forensic Laboratory.
  - Must include memos from law enforcement and district attorney.
- Laboratory Process
  - 13 - 20 loci for STR and a Y-STR profile (preferably full expanded loci profiles but can proceed with the original 13 CODIS Core loci) – Single source or deduced single source.
  - 60 manhours
  - \$13K to \$14K per search
- Results
  - Receive candidate list – 1000 to 2000 offenders. Texas CODIS Database has over 1 million offender profiles.
  - Evaluate top 150 to 250 offenders. If no match, there are still others lower on the list.
  - Can complete one familial search per year (per case).

# Texas DPS: Familial Searches

- Delays
  - TXDPS CODIS Laboratory's budget is funded by state legislation. Due to the increased Familial Search Requests, TXDPS CODIS Lab's budget did not have the funding to purchase the additional required materials.
  - Delays also occurred with obtaining materials.
  - Average turnaround time was six months per case.
  - In addition, the lab also must go through the state procurement process in order to contract with vendors for the materials. Average time for a state contract to go through the process is one year.

# Texas DPS: Familial Searches

- Solutions
  - TXDPS SAKI began funding (with approval by DOJ/BJA) STR and Y-STR kits to alleviate the time restraint.
  - In 2021, TXDPS CODIS Lab streamlined lined their process by validating and changing kits which reduced the turnaround time down to approximately **one month (testing only)**.
    - Their new process also increased the number of familial searches performed to **four to five searches** per month.

# Texas DPS: Familial Searches

- Texas DPS SAKI
  - 2020 - **13 FS requests – 6 completed**
  - 2021 - **9 FS requests – 14 completed**
  - 2022 - **14 FS requests – 13 completed**
  - Total - **36 FS Requests – 33 completed**

# Texas DPS: Familial Searches

- **33 Familial Searches completed**
  - Average Cost of a Familial Search for material: **\$9570**
  - Average Cost of a Familial Search for manhours: **\$3100**
  - Cost to CODIS Laboratory for 32 SAKI FS: **\$405,440**
  - Cost for materials only: **\$306,240**
- **In April 2022, DOJ/BJA approved FS search reimbursement to DPS CODIS Lab at an average cost of \$9570. Personnel cost already approved.**
- **From May 2022 to current, there is a reimbursement cost to DPS CODIS Lab of \$66,100 for materials only.**

# Texas DPS: Familial Searches

- Rape results in more than **\$122,000** in costs per victim and nearly **\$3.1 trillion** to the economy over the lifetimes of all **25 million victims** in the US population.
- For every rape prevented, more than **\$122,000** in lifetime costs are averted.



## Texas DPS: Familial Search Hit

- **7 Sexual Assaults** linked by DNA from 2006 to 2016 in San Antonio, TX – 2 others by MO.
- **Familial Search Hit** to brother who was a known offender and a Texas Seven Escapee who was executed in 2018.
- **Michael Anthony Garcia** – 53 YOA at time of arrest.



# Texas DPS: Familial Search Hit

- **4 Sexual Assaults** linked by DNA - one case in 2001 to three cases in 2016 .
- **Familial Search Hit** to two possible brothers who were in CODIS.
- **J\*\*\*\* J\*\*\*\*** – 57 YOA. Pending Indictment



## Texas DPS: Familial Search Hit

- **1 Single Attempted Sexual Assault** – 2005. Burglary of Habitation with Intent to Commit Sexual Assault
- **Familial Search Hit** to possible nephew who was in CODIS.
- **Jesse Rodriguez** – 39 YOA at arrest.



## Texas DPS: Familial Search Hit

- **5 Sexual Assaults** – 1995 to 1998. 4 in Texas and 1 in Louisiana.
- **Familial Search Hit** to brother who was in CODIS.
- **Eddie J. Bradley** – became deceased in 2021 due to a motorcycle accident at the age of 54.

# Familial DNA Searching vs. FGG

<b>Familial DNA Searching</b>	<b>FGG</b>
34 cases completed	34 samples submitted (25 completed testing)
5 investigative leads generated	8 investigative leads generated
4 suspects identified (3 arrested, 1 deceased)	8 suspects identified (4 arrested, 3 deceased, 1 pending indictment)
1 case being pursued with family members DNA testing	17 cases further pursued with reference testing of possible family members

# Resources

- Recommendations from the SWGDAM Adhoc Working Group on Familial Searching
  - <https://www.swgdam.org/publications>
  - SWGDAM Communications
- U.S. Department of Justice Interim Policy on Forensic Genetic Genealogical DNA Analysis and Searching
  - <https://www.justice.gov/olp/page/file/1204386/download>
- Process, SOP section
  - CO-05-04 Partial Matches and Familial Searches
  - <https://www.dps.texas.gov/section/crime-laboratory/publications>

# Texas DPS CODIS Program

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# How SAKI Funds can be used to Support Familial DNA Searching

- Overtime for laboratory personnel
  - Run the searches
  - Evaluate potential familial matches
  - Pull and profile the samples for Y-STRs
- Y-STR testing to evaluate potential familial matches
  - Purchasing of kits and reagents
  - Profiling or outsourcing to a vendor laboratory to help expedite the process
- Investigative activities associated with the location, collection, and analysis of suspect DNA samples for comparison/identification of the actual perpetrator
  - Exhumations are allowable if the suspect is deceased.

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