

**Assistance Listing Number: 16.050; Competition ID: C-BJA-2022-00156-PROD**

**A. Statement of the Problem/Description of the Issue**

The Florida Department of Law Enforcement (FDLE) mission includes promoting public safety by providing services in partnership with local, state, and federal criminal justice agencies, and the agency delivers both investigative and forensic science services throughout the state. The FDLE seeks funding to improve the processing and identification of missing persons and unidentified human remains, including migrants. The FDLE presently houses and supports a Missing Endangered Persons Information Clearinghouse (<sup>1</sup>MEPIC). A joint initiative between the FDLE MEPIC and the Florida Medical Examiners Commission (<sup>2</sup>MEC) was formed under the auspices of the Florida Unidentified Deceased Initiative (<sup>3</sup>UDI). The aforementioned resources provide analytical support and outreach towards identification of unidentified human remains (UHR) and relatives of missing persons.

As of 18 August 2022, the National Missing and Unidentified Persons System (NamUs) lists 905 unidentified persons cases in Florida with 633 containing some information. Of these, 522 indicate having complete DNA testing; however, there may be family reference samples (FRS) pending for these and other cases. NamUs also indicates 52 Florida samples have been collected but not submitted for any testing, presumably due to lack of resources. FRS samples sent to University of North Texas Center for Human Identification (UNTCHI) have recently been returned unworked to Florida law enforcement agencies, as the institute is now only funded for Texas-based cases. There are undoubtedly more UHR cases in evidence with Florida law enforcement agencies and medical examiners offices, as not all jurisdictions and

entities participate in making NamUs entries. The FDLE MEPIC and statewide crime laboratory system routinely receive calls from law enforcement seeking options for DNA testing.

Historically, the MEPIC UDI has facilitated DNA testing of FRS and UHR samples through submission to the Federal Bureau of Investigation (FBI) or University of North Texas Center for Human Identification (UNTCHI) for Short Tandem Repeat (STR) DNA, Y-STR DNA as applicable, and mitochondrial DNA (mtDNA) testing. These entities also completed the subsequent upload of profiles and associated Pedigree Trees for missing persons-related DNA records to the CODIS indexes associated with the National Missing Person Program and reviewed any potential matches and case metadata for dissemination of potential investigative leads to law enforcement. Florida law enforcement has not been able to utilize services at UNTCHI since approximately 2019, and resources available via the FBI are routinely unavailable or on significant delay due to case backlogs.

The Florida Statewide Crime Laboratory System includes 12 NDIS-participating laboratories; however, none perform mtDNA testing. The FDLE operates six caseworking laboratories and the state DNA database (SDIS), all of which are accredited by the ANSI National Accreditation Board (ANAB) to ISO/IEC 17025:2017 and the FBI Quality Assurance Standards for Forensic DNA Testing/Databasing Laboratories (QAS). Autosomal STR DNA profiles are the heart of CODIS searching for matching profiles, but for missing persons and UHRs, an additional DNA technology is needed to ensure the most robust search possible and to reveal close familial relationships which may lead to the identification of a missing person or decedent.

FDLE offers autosomal STR DNA testing and Y-STR DNA testing, two technologies suitable for CODIS entry of UHR and FRS. The lack of mtDNA testing capabilities means biological female UHR and FRS cannot receive testing in an additional technology beyond STR DNA testing. Having depended on the availability of testing services via the FBI and/or UNTCHI, the FDLE Crime Labs have only accepted UHRs for direct comparisons to alternative known samples and alleged parent or child FRS for many years. FDLE's laboratory scope of accreditation and standard operating procedures for STR DNA testing allow for parentage analysis and reporting (trio and single and reverse parentage). The FDLE also supports an existing Familial Search Program and a Genetic Genealogy Investigations Program, both with specific case acceptance criteria. These programs focus on identification of perpetrators of violent crimes, although the FDLE has instituted acceptance of one UHR case at a time for the victim of a homicide into the existing workflow.

If anticipated NamUs funding is again reinstated, RTI and NamUs will have to triage several thousand requests across the U.S. and territories in accordance with the NamUs Forensic Services Requests Triage Bulletin issued April 27, 2022 (attached). The FDLE seeks funding and support to help fill the gap in services for Florida law enforcement and families through implementation of several strategies related to DNA testing and enhancing its capabilities to offer UHR and FRS profiles to CODIS as well as using advanced techniques and technologies.

## **B. Project Design and Implementation**

Implementation of a multi-disciplinary team (MDT) is imperative in any project that spans areas of expertise and involves an interface between science, justice, and the public. It is proposed that a MDT specific to this MUHR grant project may include representatives from the following entities: FL MEPIC, FDLE Crime Laboratory, FL County Crime Laboratory, Medical Examiner / MEC, FL Sheriff, FL Police Department, family advocacy group or entity with family advocates on staff; legal counsel.

Inventory can be achieved with assistance of the MEPIC and using FDLE's existing resources as the statewide law enforcement agency. Cases yet to be processed by any Florida law enforcement entity or medical examiner's office would need to be reported on a survey-style inventory or entered into NamUs where FDLE can query the caseload, in order to be eligible for further assistance under this award. An Inspector and a Senior Crime Intelligence Analyst assigned to the FL UDI presently exist to assist with NamUs, NCIC, and ViCAP entries wherever local agencies lack such knowledge or resources.

Florida law enforcement and medical examiners offices can be notified of assistance that may be available under this award through several means, including e-mail blasts, updates to various FDLE websites, and direct outreach through the Florida Sheriff's Association. The regional NamUs coordinator would also be provided with contact information for FDLE staff and any triage flowcharts for FDLE services.

Upon completion of inventory, cases will be further triaged and selected for various pathways, such as: case review and database entry; first time DNA testing of UHR; additional DNA testing of UHR with additional or new technologies; DNA testing of FRS; first time or re-examination of possible friction ridge detail evidence; familial

search of the state DNA database for possible first order parent-child relatives within the index of convicted offenders and arrestees; sample preparation for and submission to vendor for forensic genetic genealogy laboratory testing and assessment.

Priority should be given to DNA testing FRS. Autosomal DNA testing can be completed on these buccal samples with little cost or impact to existing workflows. Adding these profiles to CODIS complies with Florida State Statute 943.325 (6)(g) and affords families a means participating in attempts to identify their missing or deceased.

Precedence would also be given to cases with a nexus to public safety, such as homicide victims, prioritizing those cases where multiple deaths have a common forensic unknown DNA profile, such that “case to case hits” in CODIS have already been obtained. This would be followed by cases where the UHR is a homicide victim with indications of violent crimes against their person, e.g. sexual assault, grievous bodily harm, or indications of serial offenses based on modus operandi or existing physical evidence.

The aforementioned MDT may be utilized to consult on the most streamlined path to an identification on a case by case basis, and as the state law enforcement entity and state crime laboratory, FDLE and its law enforcement stakeholders possess the needed investigative and forensic expertise to select proper methods and technologies. Florida medical examiners also have access to professional anthropology services for UHRs via the C. A. Pound Human Identification Laboratory at the Maples Center for Forensic Medicine at the University of Florida and the Florida Institute for Forensic Anthropology and Applied Science Forensic Anthropology Lab at the University of South Florida, to include skeletal analysis and forensic art.

To aid in more robust searching in CODIS amongst FRS and UHR samples, FDLE proposes seeking training and competency testing for three laboratory members (one DNA Technical Leader and two Crime Laboratory Analysts) to the extent required by the FBI QAS. This would allow the FDLE and other Florida law enforcement agencies to seek fee-for-service mtDNA testing at the accredited laboratory with which FDLE has an existing relationship. Ownership of profiles would be based on the completeness and ability to enter them into CODIS and to link that data to STR DNA profiles generated by FDLE or a county crime laboratory within the Florida statewide crime laboratory system. To avoid oversaturating the capacity of a small team and for the purposes of this project, mtDNA profiles would be limited to UHR and FRS. Although the cost and time required for such training and the reduction in casework capacity of the analysts involved are not ideal considering FDLE's existing DNA casework backlog and turnaround time, no alternative is available to Florida agencies, even as a fee-based service, to have these profiles generated and added to CODIS.

The existing workflow of FDLE's Familial Search and Genetic Genealogy Investigations Programs involves a comprehensive review of each case to ensure all potential investigative leads have been exhausted. Given the number of cases solved through re-examination of friction ridge evidence, as observed by NamUs, this type of evidence will also be listed on a checklist for each case under consideration for further DNA testing under this award. FDLE crime laboratory staff are well versed in advances in processing and expansion of fingerprint and palmprint databases.

Familial search is more cost-effective than genetic genealogy, can be performed in-house at FDLE, and has been conducted by the FDLE for approximately 10 years

with a 10-12% success rate on identifying a parent/child of an unknown profile. While very few searches have been conducted on UHR samples to date, accepting homicide victim profiles (where a complete STR and Y-STR profile can be obtained from the evidence) is expected to have a similar rate of associations. Funding would support the additional amplification kits needed to complete these high throughput analyses, where Y-STR testing is completed in large batches at the database location in order to check for patrilineal Y-STR haplotype matches across offender/arrestee samples selected based on a balanced stringency of shared DNA types and ranked kinship indices (a measure of statistical evidence of biological relatedness based on the frequency of occurrence of the DNA types observed).

In the existing workflow, cases with biologically female victims and those where the familial search fails to generate any leads, the case may proceed to genetic genealogy. The crime laboratory prepares DNA extract and provides technical specifications thereof to the genetic genealogy vendor. This is a major cost savings versus sending evidence or cuttings from the evidence to a vendor to begin with the extraction process, and FDLE Biology Standard Operating Procedures presently include a section on review of outsourced cases, vendor data review, and special requests related to investigative support. To date, with the FDLE-based program, labs within the Florida crime laboratory system have submitted more than 50 samples to genetic genealogy vendor labs for sequencing, with success.

The existing relationship with Parabon allows for sharing in the genetic genealogy investigations portion of the casework. FDLE has formed a partnership with Parabon over the past several years while developing an in-house Genetic Genealogy

Investigations Program. The team is presently staffed by a Senior Crime Intelligence Analyst Supervisor and three crime intelligence analysts with specialized training and analytical skills in genetic genealogy. A fourth position is being filled. To date, the team has assisted in solving 17 violent crimes cases, and more than 30 are pending. UHR cases have been accepted one at a time and constitute only three of the active cases. The capacity and focus of this team are on cases with exigent public safety threats and violent crimes cases which have not yielded CODIS hits, have all other possible investigative leads exhausted, and where the investigating agency and Office of the State Attorney have agreed to pursue the case.

In the existing workflow, Parabon's genetic genealogists continue to assist with research on approximately half of the FDLE cases, and the FDLE team takes over all investigations for the remainder. Because the in-house team already works a steady throughput, funding from this award would be used to pursue FGG testing on UHRs and target reference samples as needed for missing persons and UHR cases. Utilizing in house experts to assist with triage and sample preparation, along FDLE's existing relationship and contractually defined rates for services, funds under this award would benefit the maximum number of cases where FGG is the last possible tool available for a possible identification. Upon cessation of the funding, if any cases that lack associations in GEDmatch or Family Tree DNA (FTDNA) databases subsequently develop matches, the FDLE GGI Team would be able to pay for or assume any additional research needed in order to resume the case.

The FDLE commits to the DOJ Interim Policy on Forensic Genetic Genealogical DNA Analysis and Searching or the final policy when issued for the purposes of any



cases funded through this award. The required performance measures for these types of cases, such as crime and sample specifications and results, are presently maintained and assessed by the FDLE GGI Team and management. Only the total amount of federal funding used for each case would need to be added to satisfy Section IX of the MUHR Program award.

The FDLE is nearing the completion of a validation of the Illumina MiSeq instrument and Forenseq DNA Signature Prep Kit at the Tampa Bay Regional Operations Center crime laboratory. The validation also involved a material modification of the FDLE Biology bone extraction method, resulting in greater yields and cleaner samples. The kit itself is NDIS-approved and could therefore be used on challenging bone samples for UHRs for CODIS entry. Funds from this award could be used to purchase kits dedicated to UHR casework. FDLE is investigating the utility of the ForenSeq Kintelligence Kit to aid in GGI cases where insufficient sample for outsourcing for the larger SNP panel testing or whole genome sequencing exists, but predominantly for providing the GGI team with results from close relative (second cousin or closer) target reference testing. Any such reference testing would be performed with informed consent of the test subject. Performing the testing in-house using kits purchased through this award would expedite narrowing down family tree associations and reveal exclusions more quickly, allowing the GGI Team to better focus its research towards an identification when working UHR cases. If uploaded to the available databases using the FDLE law enforcement account, any matches could also be shared with our partner genetic genealogists at Parabon for UHR cases where the research has been outsourced.

FDLE has also utilized shotgun sequencing technology available from Othram, Inc., where the technical specifications of the sample available from bone did not result in usable data when array sequencing was attempted through Parabon's vendor laboratory. The raw data was successfully transferred from Othram to FDLE for upload and research, and under certain circumstances, this type of approach to a particularly difficult sample may again be considered. FDLE's experience with different approaches to SNP testing using external vendors would allow for assessment of case samples and prevent unnecessary waste of sample, time, and funds where no result is anticipated.

Repatriation of human remains shall be conducted in accordance with Florida State Statutes 497.386 and Chapter 872. Notifications will be made by the law enforcement agency and/or medical examiner's office with jurisdiction over the applicable case.

The above represents changes to existing FDLE case acceptance policy for the laboratory and expands the roles of some members in order to provide services related to missing person and UHRs. Funds awarded through this solicitation, however, would be predominantly used for laboratory supplies, processing and identification, and genetic genealogy services to allow the most effective use of federal funding. Staff, procurement logistics, and administrative costs would be absorbed within existing budgets. Funding for consumables and outsourcing of routine forensic casework are presently aided by a DNA Capacity Enhancement and Backlog Reduction grant as well as Florida funds, so the addition of services to work UHR and FRS samples necessitates additional funding to ensure sufficient operating expenses. Some of the funds of the CEBR grant are passed through to county laboratory recipients; however,

the additional testing related to familial searches and genetic genealogy for the entire state are born by the FDLE.

### **C. Capabilities and Competencies**

Capabilities and competencies of FDLE staff involved in substantive aspects of the proposal are well-defined for the Deputy Director of Forensic Services, the Biology Special Projects Coordinator, and the Crime Lab Analyst Supervisor / DNA Technical Leader. The FDLE has well-demonstrated ability and experience to manage the efforts of this project. Both the Deputy Director and the Biology Special Projects Coordinator have extensive experience participating in MDTs, and the existing FDLE MEPIC/MEC/UDI stakeholders provide a breadth of knowledgeable individuals.

The FDLE has a lengthy history as the recipient of various BJA and NIJ solicitations with favorable outcomes, including but not limited to: Edward Byrne Memorial Justice Assistance Grant Program, Project Safe Neighborhoods, Paul Coverdell Forensic Science Improvement Grants Program, DNA Capacity Enhancement and Backlog Reduction Program (CEBR). Awards dating back to the FY2001 No Suspect Casework DNA Backlog Reduction Program and forward to the present CEBR award have been well-managed by the FDLE by the Forensic Director's Office and the FDLE Business Support Program, which maintains an Office of Criminal Justice Grants.

While not a formal partner, in executing aspects of this project, the FDLE will rely upon its existing contractual relationship with <sup>4</sup>Parabon Nanolabs for its Parabon™ Snapshot® DNA Analysis, whole genome sequencing contractor capabilities, and Genetic Genealogy services. Other aspects of the project involve liaising with <sup>5</sup>Bode Technology, an ANAB-accredited DNA forensic services provider, with whom the FDLE

has held a lengthy outsource testing relationship. The FDLE maintains QAS Standard 17 documentation for Bode Technology and presently accepts direct outsourced casework profiles for technical ownership review and CODIS entry for Florida law enforcement agencies in the FDLE crime laboratory service area. Bode Technology's Scope of Accreditation includes autosomal STR DNA, Y-STR DNA, and mtDNA profile determination and comparisons.

#### **D. Plan for Collecting the Data Required for this Solicitation's Performance Measures**

Reporting to better understand the circumstances and scope of missing persons and UHRs including migrants in Florida will rely upon existing access and query abilities within NamUs and NCIC as well as documentation maintained by the MEPIC and UDI, which primarily gleans its information from these two resources as well as communications with law enforcement partners.

By requiring its customers to enter all criteria cases into ViCAP before being considered for additional forensic testing, FDLE can ensure this particular metric is met and can be measured at the end of the award period. This will also serve as a motivation for Florida law enforcement to expand utilization of the database where applicable. FDLE does currently aid its customers in preparing for ViCAP entry, and customers would also be notified of the availability of FBI ViCAP staff to assist and provide training and possible crime analyses.

NamUs entry would also be a prerequisite to using FDLE laboratory and GGI services for FRS and UHRs. This requirement ensures more Florida cases are entered into the database, facilitating more solves by families and the community. Available data

suggest the majority of NamUs solves in Florida are attributable to family member and volunteer research. Making this part of FDLE's policy should result in more overall activity in NamUs and therefore more associations and identifications without additional expenditures for testing. NCIC entry, in compliance with DOJ guidelines for the Missing and Unidentified Persons File, rounds out the requirements we would like to place on our law enforcement and medical examiner customers in order to receive DNA testing. As indicated, FDLE does have existing analytical and law enforcement resources to assist smaller or less informed agencies with completing these administrative tasks, which would ensure all possible investigative avenues have been pursued before expenditures are made on new or additional DNA testing, to include GG.

Associations made through CODIS pursuant to this award are readily identifiable using existing reporting mechanisms available to the FDLE as the overseer of the FL SDIS. FDLE presently employs an analyst who monitors NamUs and can therefore identify cases solved at least in part resultant to increased awareness due to this award.

FDLE GGI Team experience and published research suggest the available databases for GG research are more highly populated with individuals who would appear white and have European ancestry. Using FGG to identify white versus brown or black UHRs may result in more associations and identifications of white persons. This has been a stumbling block for some investigations involving profiles attributable to individuals of mixed heritage or Hispanic origin and also African American and Afro-Caribbean black donors. CODIS is more representative of the varied ethnic and geographic origins of the citizens and visitors of Florida as well as those of migrants associated with the state's permanent and transient population. It is also plausible that

submission of an FRS sample to CODIS using STR and mtDNA data, which provides no phenotypic information and is safeguarded as a law enforcement only database, is more palatable to potential relatives of missing persons than public genetic genealogy databases that require an opt-in to share results with law enforcement and require extensive and potentially revealing SNP testing by a commercial vendor. For these reasons, FDLE promotes the use of CODIS and reserves FGG for cases where no identification could be made by other means. The addition of Y-STR and mtDNA results greatly enhances the robustness of these searches.

Although the FDLE is not seeking review for addressing an OJP priority area, the department and county crime laboratories do process evidence for Seminole Tribe of Florida Police. It is expected that any assistance required for UHR and FRS from Tribal law enforcement, which provides services at seven reservation locations, would be accepted and assimilated into the review and testing process expeditiously. The Tribal law enforcement in Florida serves enrolled members of the tribe and their descendants, and many such individuals live throughout Florida and may or may not work or live on associated Tribe property or within specific Tribal communities.

<sup>1</sup>MEPIC, [www.fdle.state.fl.us/mcicsearch](http://www.fdle.state.fl.us/mcicsearch)

<sup>2</sup>MEC, [www.fdle.state.fl.us/MEC/MEC-Home.aspx](http://www.fdle.state.fl.us/MEC/MEC-Home.aspx)

<sup>3</sup>UDI, [www.fdle.state.fl.us/mcicsearch/UnidentifiedProgram.asp](http://www.fdle.state.fl.us/mcicsearch/UnidentifiedProgram.asp)

<sup>4</sup>Parabon Nanolabs, <https://snapshot.parabon-nanolabs.com>