

**FY 2019 DNA Capacity Enhancement for Backlog Reduction (CEBR) Program  
Columbus Police Crime Laboratory  
Program Narrative**

- a. Description of the Issue.
  - i. The Columbus Police Crime Laboratory currently has a bottleneck in the screening process. We have a large number of items that require time-consuming screening before they can be analyzed for DNA. The screening process is time-consuming due to the necessity of performing numerous serological tests per item and taking copious notes and photographs.
  - ii. Our laboratory faces challenges with having sufficient personnel available to screen evidentiary items as they are received. Additionally we are receiving pressure to collect swabbings of firearms so that they can be processed for NIBIN entry within two days. Our current laboratory screening areas are not adequately equipped to enable us to process items in the most efficient manner.
- b. Project Design and Implementation.
  - i. **Goals:** Increase our capacity by enabling us to process DNA samples faster/more efficiently, reduce DNA sample turnaround times, and reduce/prevent a backlog of DNA cases.
    - Objective 1:** Purchase additional instrumentation, equipment, and software.
    - Objective 2:** Hire a laboratory technician to assist with processing, recording, and screening forensic DNA samples.
    - Objective 3:** Reduce/prevent a DNA case backlog by purchasing supplies necessary to process DNA samples.

**Objective 4:** Provide the required annual continuing education for analysts, which will enable us to stay up to date with current requirements, methods, and policies within the DNA community. The knowledge gained at DNA educational conferences can be used to possibly implement more efficient processes and procedures

**Expected Results:** To increase our current screening capacity by ~15% and to reduce our current backlog by ~150 cases and maintain a turnaround time of ~30 days.

ii. **Plan**

This award will be used to increase our current capacity in multiple ways. Funding will be used to purchase the following items:

- TubeWriter 360: this instrument will enable us to quickly label up to 96 tubes at one time. This is significantly faster than an analyst can hand-label tubes. Additionally the labels will be legible and uniform across all personnel. This instrument will also decrease the chance of contamination during this step as the tubes can be labelled with minimal handling.
- Cameras: the purchase of additional cameras will eliminate the current issue of analysts having to wait for an available camera while screening
- Analysis computer monitors: the purchase of larger computer monitors will enable analysts to analyze DNA electropherograms quicker/easier since the entire electropherogram can be viewed on a larger monitor, as opposed to our current monitors which can only display partial profiles due to size. The purchase of additional monitors will enable analysts to perform side-by-side comparisons of DNA profiles as opposed to having to click back and forth with one monitor. This will significantly decrease analysis times.

- Computer workstations: the purchase of two mobile serology computer workstations will enable analysts to more efficiently screen larger evidentiary items. Our current serology rooms are only equipped with a built-in desk area that is located in a corner of the room far away from the screening table. This requires analysts to walk back and forth in order to take notes. The addition of the mobile workstation would enable analysts to have the computer next to their evidentiary items and significantly decrease screening times.
- Serology workstation computer monitors with Adobe Pro software: the purchase of additional monitors with Adobe Pro software for serology workstations will enable analysts to easily annotate their evidence photos at the time of screening. Having the double monitor will allow them to have the screening worksheet open along with the photos so they can easily add any necessary information to the photos using Adobe Pro.
- epMotion accessories: the purchase of additional accessory racks for our epMotion liquid handling robots will enable us to add additional protocols so that we can more efficiently process DNA samples.
- epMotion multicon computers: the purchase of three multicon computers for our epMotion robots will provide the ability to edit/import new protocols and more easily review/enter sample information.

Funding from this grant will also be used to hire a DNA laboratory technician. This technician will increase our capacity by enabling us to screen additional evidentiary items, assisting with evidence processing/accessioning, assisting with laboratory quality control testing, and various other duties as needed.

This award will be used to reduce the number of DNA cases awaiting analysis by purchasing supplies for analysts to work DNA cases. The supplies will be purchased as necessary during 2020. It is anticipated that all supply funds will be spent during 2020. At least 120 cases will be worked with the supply funding from this award. Having the necessary supplies will enable us to continuously work cases and more effectively decrease our backlog and decrease our turnaround time.

Funding from this grant will also be used to fulfill analysts' continuing education requirements and obtain information regarding possible efficiency and/or cost-saving upgrades. The training provided to analysts will increase their knowledge of current topics in DNA analysis which includes interpretation of DNA mixtures. This training along with in-house training will provide the necessary knowledge to perform casework thereby increasing this laboratory's throughput and capacity. The following training will be attended:

<b>Training</b>	<b>Location</b>	<b># of analysts</b>
2020 Bode Technology Conference	Phoenix, AZ	2
2020 Green Mountain DNA Conference	Waterbury, VT	1
2020 STRMix User's Group Meeting	San Diego, CA	3
2020 Promega International Symposium	Palm Springs, CA	4

### iii. Bottlenecks

The addition of a laboratory technician and equipment/software to streamline our current screening methods will enable us to address our current bottleneck of evidentiary items awaiting screening.

**iv. Observed/Anticipated Increases in DNA submissions**

We anticipate that the number of DNA requests will continue to increase by about 10% per calendar year. We have also seen a recent increase in violent crime within the city of Columbus which has increased the demand for DNA services. Additionally, the City of Columbus does not charge a fee for our DNA services and we are often contacted by local agencies to provide DNA analysis assistance. As our laboratory becomes more efficient and our turnaround time decreases, the demand for our services will increase. This will cause a significant increase in the number of submissions to the DNA laboratory and has a slight potential to negatively impact the project's expected results.

**v. Funds to be Used for Screening and Analysis of DNA Cases**

The Columbus Police Crime Laboratory will process, record, screen and analyze over 120 cases in-house using federal funding for casework assistance within the 24 months of this FY2019 program above and beyond the number that will be analyzed using other sources of funding.

**vi. Sustainability Plan**

The Columbus Police Crime Laboratory management has coordinated with our fiscal operations to ensure that city funding will be available for the DNA laboratory should we not receive later federal funding.

c. Capacities and Competencies

**i. Proposed Project Staff**

Ms. Emma Becker, DNA Technical Leader/Supervisor/CODIS Manager of the Columbus Police Crime Laboratory DNA Section, will be the Grant Point of Contact and Financial Point of Contact in GMS. Ms. Becker has been the point of contact on multiple previously awarded DNA grants.

Ms. Angela Farrington, Crime Laboratory Manager, will be the Secondary Point of Contact. Ms. Farrington has been the point of contact on previously awarded Coverdell grants.

**ii. Ability to Manage Effort**

The Columbus Police Crime Laboratory DNA section has an authorized strength of nine DNA analysts and one DNA Technical Leader. The DNA section is currently able to process approximately 200-250 DNA cases per month.

**iii. Relationship between Staff Capabilities/Competencies and Proposed Project Scope**

With the current number of fully trained DNA analysts, the Columbus Police Crime Laboratory is fully capable of incorporating the proposed capacity-enhancing equipment, software, and personnel to achieve the expected results.

d. Data Collection Plan

- i. The Columbus Police Crime Laboratory DNA Technical Leader will be responsible for collecting performance measure data

ii. Performance measure data will be collected using the following plan:

<b>Performance Measures Data</b>	<b>Data Collection Method</b>
Number of forensic biology/DNA cases submitted to the laboratory during the reporting period.	Collected via Laboratory Information Management System (LIMS)*
Total number of forensic biology/DNA cases completed by the laboratory during the reporting period	Collected via Laboratory Information Management System (LIMS)*
Total number of forensic DNA samples completed by the laboratory during the reporting period.	Collected via Laboratory Information Management System (LIMS)*
Average number of days between the submission of a request, by type, for forensic biology/DNA analysis to the laboratory and the delivery of the test results at the beginning of the award period.	Collected via Laboratory Information Management System (LIMS)*
Average number of days between the submission of a request, by type, for forensic biology/DNA analysis to the laboratory and the delivery of the test results at the end of the reporting period.	Collected via Laboratory Information Management System (LIMS)*
Number of backlogged forensic biology/DNA cases at the beginning of the award period.	Collected via Laboratory Information Management System (LIMS)*
Number of backlogged forensic biology/DNA cases, at the end of the reporting period.	Collected via Laboratory Information Management System (LIMS)*
Total number of DNA profiles from forensic analyses entered into CODIS for the DNA laboratory.	Collected via created search parameters on the CODIS system
Total number of CODIS hits from forensic analyses for the DNA laboratory.	Collected via Laboratory Information Management System (LIMS)*

\*Data collection metric reports have been created in LIMS to ensure accurate and complete reporting of all performance measure data.

The data will be accurate, auditable, and available for review 3 years post-award. The performance metrics for the beginning of the award will be based on the six months prior to the start date of the award.

This agency considers all pending serology screening, male screening, DNA analysis, and CODIS hit requests to be 'backlogged' cases. The laboratory's LIMS generates a report for the backlog of cases awaiting analysis as of a given time. The LIMS is also capable of generating a

report for the backlog of cases older than 30 days if required for performance reports. The LIMS system captures the data necessary for the identification and number of cases processed and samples analyzed for DNA. Each case worked by the DNA Section will be entered only once in LIMS so samples will not be double-counted. CODIS hits are tracked as a separate service through the Crime Laboratory's LIMS system. The LIMS is capable of generating a report of the number of CODIS hit reports released during a reporting period. CODIS entries are accurately recorded by the CODIS software system (controlled by the FBI) and are available via a simple search request on our local CODIS workstation.

- iii. The LIMS system used by the Columbus Police Crime Laboratory has been validated and has been shown to accurately track and record case information (including metrics). Additionally, the LIMS system is secure, password-protected, and accessible by only authorized laboratory staff. A Data Management Coordinator is permanently assigned to the Crime Laboratory to ensure the integrity of the LIMS data.

**Performance Measures**

Baseline Backlog Data for Casework Laboratories

Number of untested/not completed forensic biology/DNA <b>cases</b> on hand on January 1, 2018.	744
Number of untested/ not completed forensic biology/DNA cases more than 30 days old ( <b>backlogged</b> ) on January 1, 2018.	614
Please estimate percentage of these cases that were from property crimes.	35
Number of new <b>cases</b> for forensic biology/DNA received in 2018.	1925
Please estimate percentage of these <b>cases</b> that were from property crimes.	35
Total number of forensic biology/DNA <b>cases</b> completed in 2018.	2464
Please estimate percentage of these <b>cases</b> that were property crimes.	30
Forensic biology/DNA cases closed by administrative means in 2018.	<b>0</b>
Number of untested/ not completed forensic biology/DNA <b>cases</b> on hand on December 31, 2018.	200

Number of untested/ not completed forensic biology/DNA <b>cases</b> more than 30 days old ( <b>backlogged</b> ) on December 31, 2018.	80
The average number of days needed to complete (including peer review and report) non-priority forensic DNA cases for calendar year 2018. Please indicate violent crime time with a “ <b>V</b> ” and the nonviolent crime time with “ <b>NV</b> .” If the applicant cannot separate violent and nonviolent cases, give the number with no other markings.	97