Mandatory Project

(*All laboratories will participate in the following projects for the FY21 CAP year.*)

Food Defense Surveillance

Laboratories participating in the FSIS FERN Cooperative Agreement Program will be asked to perform ongoing Food Defense Surveillance of FSIS products. On a quarterly basis, the FSIS FERN Staff will provide guidance to CAP laboratories on the FSIS products to be analyzed and the analyses to be performed. Laboratories will acquire samples from retail locations, preferably utilizing normal state processes for retail collection while following chain-of-custody and quality assurance. Laboratories should also be willing to receive samples provided directly by FSIS. The samples shall be analyzed and reported on a monthly schedule. This project addresses requirements of HSPD-9 to maintain a network of food laboratories at the SLTT level that provide adequate surge capacity, standardized methods, reporting, and information sharing. It also supports the FSIS mission of ensuring the safe and wholesome nature of meat, poultry, and egg products within the United States.

-a minimum of 15 samples per month for microbiology
-a minimum of 15 samples per month for chemistry
-a minimum of 20 samples per *quarter* for radiochemistry

Capability and Capacity Exercise

Laboratories must include their willingness to participate in an annual Capability and Capacity Exercise. This activity will involve laboratories receiving samples with limited up front notification. While the exercise may change from year to year, laboratories should be prepared to provide analysis of a large number of samples, provide analysis with a quick turn around time, and/or demonstrate competency in multiple analyses. Laboratories can provide information on their participation in similar scenarios as a demonstration of likely success. This activity addresses a need for laboratory surge capacity and analyst proficiency for emergency response in the event of a national food defense and/or food safety emergency.

Special Event Testing

Testing of samples associated with special security events (SSE) and national special security events (NSSE) (e.g. Super Bowl, Political Conventions, other high-profile events as identified) as provided by FSIS. Four events are anticipated for FY21. Labs should budget for 10-15 samples per event. Labs will be expected to analyze samples for a combination of Chemistry, Radiochemistry and Microbiology analytes. Samples will be provided by FSIS directly to the laboratory and should be maintained with chain-of-custody and quality system oversight.

Additional projects to perform this CAP year

(*projects should be written for completion within one award year; laboratories would be expected to propose at least one project per discipline.*)

Catfish Traceback

(This project is a high-priority to FSIS. Preference will be given to proposals that include this work.)

In 2018, FSIS regulatory laboratories began testing catfish tissue as part of their food safety sampling programs. The FSIS FERN cooperative agreement program provides testing capability to FSIS for possible traceback activities involving the testing of water and feed associated with catfish production. Traceback testing could include the need to detect antibiotic residues, pesticides, dyes such as crystal violet and malachite green, and heavy metals. Traceback activities are described in FSIS

Directive 14,000.2. Laboratories willing to participate in this activity can propose to following work to ensure capability to provide laboratory results requested by FSIS.

1) Verify that the participating laboratory can analyze water and feed samples for compounds listed in the FSIS CLG method MRM1, PST5, MGCV1, MGCV2 and TM3.05 and *Salmonella*.
2) Provide regular, on-going sampling and testing of water and feed associated with catfish, up to 100 samples per year of each matrix. These samples shall be done in place of the samples in the Food Defense Surveillance project.
3) Samples are to be obtained by the laboratory.
4) Run one set of check samples per quarter covering each method for the year.
5) Receive 1 set of interlaboratory challenge samples per year.

Extraneous Materials/Filth Testing

(This project is a high-priority to FSIS. Preference will be given to proposals that include this work.)

Laboratories will analyze FSIS procedures for filth and develop FERN methods. Laboratories should verify FSIS methodologies under a quality system. Labs should also be willing to run samples requested by FSIS for suspected contamination.

1) Verify that the participating laboratory can analyze samples for compounds listed in the FSIS PLG-0002.01, PLG-0003.01
2) Provide regular, on-going sampling and testing of FSIS regulated products, up to 100 samples per year. These samples shall be done in place of the samples in the Food Defense Surveillance project.
3) Samples are to be obtained by the laboratory.

State Special Event Testing

State laboratories will be expected to identify, plan and coordinate an in-state testing exercise for food defense analytes. State CAP labs would need to test up to 10-15 samples (or as many as required). Project officers would be available to assist with planning based on prior national events. Goal of the project would be to establish the ability to cover in-state special events with limited network support. Successful performance would lead to reduction in the quarters' mandatory surveillance sample numbers to be tested.

ICP-MS Course

Laboratories should write to development of a course to train laboratorians in ICP-MS techniques, including the FERN ICP-MS method CHE.0009.01. Students should learn common FERN practices for sample preparation, ICP-MS instrument operation, and data analysis for the determination of metals contamination in food matrices. The course should work toward implementation (teaching) of the course by the end of the award year. Depending on resources available, course should accommodate at least 4 students. Budget should include costs related to consumables, standards and reimbursement of travel for students. A successful course will keep analysts up to date on current ICP-MS methods resulting in increased support of current FSIS food safety/food defense testing capability and capacity. This course fills a gap in the FSIS FERN training program.

LC-MS Course

Laboratories should write to development of a course to introduce laboratorians to the FERN LC-MS Poison/Toxin screen CHE0008.00. Students should learn common FERN practices for sample preparation, LC-MS instrument operation, and data analysis for screening food matrices for chemical contaminants. Course should work toward implementation (teaching) of the course by the end of the

award year. Depending on resources available, course should accommodate at least 4 students. Budget should include costs related to consumables, standards and reimbursement of travel for students. A successful course will keep analysts up to date on current LC-MS methods resulting in increased support of current FSIS food safety/food defense testing capability and capacity. This course fills a gap in the FSIS FERN training program.

Universal Extraction Method for LC/GC-MS analysis

Validate an identified single extraction method for LC-MS and GC-MS analysis in FSIS food matrices. The workgroup should validate at least 4 matrices for all analytes in CHE.0006 and CHE.0008. Validation should be completed by end of award year. Validation should follow FERN guidelines as listed in FERN-ADM.0008.01. Successful completion would allow for more efficient screening of FSIS regulated commodities for all poison, toxin, and drug food defense analytes without the need for a second extraction.

Addition of analytes to FERN CHE.0009 from FSIS methodology

This project is to extend the current FERN-CHE.0009.01 ICP-MS metals method to include all analytes from FSIS CLG TM3.06 (Fe, Al, B, and Ba) currently not included in the FERN-CHE.0009.01 method. This method could then be used to support current FSIS food safety testing capability and capacity and allow direct comparison of results from FERN programs to FSIS programs. Validation should follow FERN guidelines as listed in FERN-ADM.0008.01. The validation may also require coordination with FSIS Lab Quality Assurance Staff.

Clostridium perfringens Method

Validation of a method for the enumeration of *Clostridium perfringens* in ready to eat FSIS matrices. The method will be part of an ongoing FSIS project to conduct a market basket study to enumerate *C. perfringens* in large mass ready-to-eat (RTE) meat and poultry products (e.g. turkey breast, roast beef, pork shoulder). Included samples will be collected from beef (roast beef), poultry (turkey breast), and pork (pork shoulder) products. All samples should initially be large mass (> 4.5 inches thick or > 8 pounds). Products should be collected from a variety of brands and may be purchased sliced at the deli counter or in intact packages. Sliced products will be selected (when possible) because that is how consumers are most likely to purchase the product. This study is critical to the FSIS mission, because the CDC reports that *C. perfringens* is the second most common cause of bacterial foodborne illness in the US, with beef being the most common commodity, followed by poultry and pork. The method shall discriminate between the enumeration of spores and vegetative cells in the matrix. The method would describe the matrix prep, growth medium, isolate confirmation and calculation of numbers of *C. perfringens* spores and vegetative cells in the original sample. The validation study must follow FERN guidelines as listed in FERN-ADM.0008.01. The validation may also require coordination with FSIS Lab Quality Assurance Staff and could include requirements such as chain-of-custody, quality assurance records, and submission of quality control documents.

MALDI-TOF analysis of FSIS matrices for microbiological agents

Laboratory should develop and/or validate a method for FERN analysis of food defense analytes such as *B. anthracis*, *Y. pestis*, etc. that can be added to the current FERN approved methods. The intent is to quickly rule-out non threat agents and provide methods with shorter time to results. Methods that also incorporate food safety targets such as *Listeria monocytogenes*, *Salmonella*, etc in FSIS matrices are also of interest. Project may use existing methods to be modified for FSIS/FERN use. Validation should follow FERN guidelines as listed in FERN-ADM.0008.01. The validation may also require coordination

with FSIS Lab Quality Assurance Staff. Successful completion would be beneficial in decreasing time to result in FSIS and FSIS/FERN laboratories.

Method development

Laboratories will be expected to identify, plan and coordinate development of laboratory method for analysis of food defense analytes that addresses a specific deficiency or need with current FERN approved methods. Laboratories could also choose to address a need as identified by FSIS (project priorities) with respect to improved methods. Projects may be planned for single or multi-laboratory participation. Methods may be for microbiology, chemistry and/or radiochemistry analytes. Project should be planned/coordinated with a project officer and/or a workgroup. Validation should follow FERN guidelines as listed in FERN-ADM.0008.01. The validation may also require coordination with FSIS Lab Quality Assurance Staff.

State Proposed project

Laboratory may propose a project outside of the projects listed above that is of interest to the state and beneficial to the FERN network and USDA/FSIS pending approval by FERN. This project would address a gap in State or Federal Food defense strategies at the local level. Project should have a completion date and a deliverable within one award year. Projects may be for microbiology, chemistry and/or radiochemistry analytes. Project should be planned/coordinated with a project officer and/or a workgroup.