



## REQUEST FOR PRE-PROPOSALS

*Please Copy and Distribute to All Interested Parties*

The USDA-NIFA Southern Regional Aquaculture Center solicits response from qualified multi-state teams interested in participating in the regional project:

### INVESTIGATING THE EMERGENCE OF VIBRIOSIS IN CATFISH HATCHERIES IN THE MISSISSIPPI DELTA

SRAC's Board of Directors has authorized up to \$60,000 for a 2-year project investigating the emergence of Vibriosis in catfish hatcheries in the Mississippi Delta. This project will be developed using the "competitive proposal method" where a team of multi-state scientists having demonstrated records of expertise in the subject complete a single pre-proposal that addresses all project objectives. One proposal will be selected for funding based on review by a committee of scientists not involved in any of the proposals that are submitted.

#### Background

Over the past several years, Vibriosis caused by *Vibrio* spp. has been identified as a cause of isolated losses in catfish hatcheries located in the Mississippi Delta. These isolates are biochemically consistent with *V. cholerae* but appear genetically distinct from strains associated with human disease, consistent with anecdotal reports of Vibriosis in other cultured and wild fish species. Preliminary research has shown a high degree of genetic variability among isolates from infected catfish fry suggesting the existence of multiple genetic variants. A better understanding of the identity of these genetic variants and their source of origin is essential. Hence, it is critical to identify suitable genetic markers and develop a molecular based assay that can differentiate these strains from other environmental *Vibrio* spp., as well as document differences between fish associated strains and toxigenic *V. cholerae*. Collection of bacterial isolates and development of methods for rapid detection in fish tissues and the environment will be valuable in determining modes of transmission and sources of contamination in catfish hatcheries.

#### Objectives

1. Characterization of *Vibrio* spp. isolated from catfish hatcheries and development of discriminatory tests to differentiate catfish associated *Vibrio* spp. from other *Vibrio* spp.
  - a. Phenotypic, genotypic and antimicrobial characterization of *Vibrio* spp. isolated from catfish hatcheries, as well as other *Vibrio* spp. associated with fish
  - b. Develop and validate rapid confirmatory tests for differentiation of emergent strains from other *Vibrio* spp. and detection of *Vibrio* spp. in fish tissues and the environment
2. Evaluate potential sources of contamination to catfish hatcheries.

## Experimental Approach

Contemporary biochemical and molecular methods, including but not limited to DNA fingerprinting, MLSA analysis, genomics, plasmid profiling and antimicrobial susceptibility testing should be employed to characterize the *Vibrio* spp. associated with disease outbreaks in catfish hatcheries. The results should facilitate a better understanding of the similarities/ differences among bacterial strains associated with fish and toxigenic *V. cholerae* strains, as well as other *Vibrio* spp. present in aquatic environments. Identification of genetic markers specific to catfish associated *Vibrio* spp. should aid in development of rapid and sensitive molecular based assays, complementing the evaluation of potential sources of *Vibrio* contamination in catfish hatcheries. Adequate characterization and environmental monitoring of these bacteria should provide guidelines for the development of effective management measures to reduce the economic losses currently experienced as a result of this disease.

## How to Respond

Pre-proposals must address both objectives. Preference will be given to pre-proposals that show a high degree of collaboration and coordination among participants. To meet the criterion for a regional project, the pre-proposal must include collaboration from scientists in two or more states or territories in the Southern Region (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands, and Virginia).

The pre-proposal must include a one-page vita for each participant and a proposed budget for each participating institution or organization. Indirect costs and tuition remission are not allowed. Expenditures for PI salary, soft-funded positions, equipment, and travel are allowed when they meet specific criteria. Pre-proposals, vitae, and budgets that are not in the proper format will not be considered. (See “*Guidelines for Writing a SRAC Pre-Proposal (Comprehensive)*” file attached or contact Kristen Thompson with the SRAC office at 662-686-3269.)

Send an electronic copy of the pre-proposal in Word format to Jimmy Avery, SRAC Director as an email attachment (jimmy.avery@msstate.edu) by **July 15, 2019**. Proposals received after that date will not be considered.