



## 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:

### **Development of Effective Vaccines for *Flavobacterium columnare* (Columnaris) in the U.S. catfish industry.**

SRAC's Board of Directors has authorized up to \$300,000 for a 3-year project on *Development of effective vaccines for Flavobacterium columnare (Columnaris) in the U.S. catfish industry*. This project will be developed using the "comprehensive 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**

Columnaris disease, caused by *Flavobacterium columnare* is one of the most common bacterial diseases of warmwater fish and infects at least 36 species of cultured and wild fish. In the channel catfish (*Ictalurus punctatus*) industry in the United States, *F. columnare* is the second most prevalent bacterium to cause disease and mortality with yearly losses estimated at 30 million dollars. Although Columnaris disease is often considered a secondary infection following periods of stress or infection by other parasitic or microbial agents, it can also occur as the sole causative agent. Treatments for Columnaris include potassium permanganate, formalin, and copper sulfate, when the disease is external and antibiotics when the disease is internal. Currently, only two antibiotics for use against Columnaris disease have been approved by the US Food and Drug Administration, to which antibiotic resistance has been reported. Consequently, the need for a vaccine to control Columnaris disease is needed.

Effective vaccines are a safe, prophylactic approach to mitigate the effect of infectious diseases, such as Columnaris. Among the various types of available vaccines, live attenuated vaccines are those in which the pathogen has been modified and is no longer virulent to the host. Attenuated vaccines present multiple immunogens while building in adjuvanticity that elicits strong humoral and cell mediated protection. Additionally, in catfish aquaculture, where vaccination of individuals is cost-prohibitive, attenuated vaccines have the advantage of ease of delivery through feed or by immersion.

#### **Objectives**

1. Development and identification of vaccine candidates (feed based or immersion) to control *Flavobacterium columnare* in farm-raised catfish.
2. Safety testing and identification of optimal delivery for vaccine candidate identified in Object.1.
3. Development and testing of vaccine protocols under experimental pond conditions.

## **Experimental Approach**

In Year 1, existing or potential vaccines should be developed, and production methodologies should be optimized to ensure enough vaccine can be manufactured for the remainder of the project for research under laboratory and experimental pond conditions. Safety testing and identification of optimal delivery of the developed vaccine(s) should be tested through laboratory challenges prior to pond trials. In Years 2 and 3, vaccine trials should be conducted in research ponds to evaluate efficacy under conditions like those found on commercial farms.

## **How to Respond**

Pre-proposals must address all 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. 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 Walters 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](mailto:jimmy.avery@msstate.edu)) by **February 5, 2021**. Proposals received after that date will not be considered.