ITMU Number: ITMU/1808/1/EOI

Central Institute of Fisheries Education
Institute Technological Management Unit (IMTU)
CIFE Old campus, Mumbai- 400061
Website: www.cife.edu.in

Call for "Expression of Interest" from Industrial partner for BIRAC funding and field testing of DNA vaccine developed against *Edwardsiella tarda* infection in fish (Commercialization of DNA Vaccine)

Brief description about Pathogen:

Edwardsiealla tarda (*E. tarda*) is one of the major bacterial pathogen, not only in fish but also in other higher vertebrates including human. *E. tarda* has been isolated from many warm water fishes and some coldwater fishes that include Indian major carps, catfish, salmons and other economically important fish. The geographic distribution of bacteria is worldwide. Recently many incidences of presence of *E.tarda* in fish harvested for human consumption have been reported from India and abroad.Being consumer, human always has a threat of zoonotic edwardsiella infection. Because *E. tarda* is ubiquitous, many animals can serve as reservoirs of infection. Furthermore, the environment can be a source of infectivity because this bacterium survives as long as 76 days in pond water and mud. The bacterium is one of the common pathogen of secondary infection in freshwater and marine water, and directly affects the economy of fish production.

Need of DNA Vaccine-

For decades antibiotics were being used for treatment of bacterial infections in aquaculture but due to threats of emergence of multidrug resistant pathogen and adverse side effects of antibiotics, these are now completely banned. Coastal Aquaculture Authority has banned over 22 antibiotics for usage in aquaculture which includes chloramphenicol, nitrofurans, macrolides, floroquinolones, glycopeptides, sulphonamides etc. Recently, a major batch of shrimp exported to China has been rejected due to the presence of chloramphenicol residues. These illegal and misuse of antibiotics will lead to the development of Antimicrobial Resistant Bacteria, which can transfer to humans and animals.Vaccine development against fish pathogens has not been an active area of research in India however compared to diagnostics and other areas so far;however due to banning of antibiotics and also due to many emerging pathogens it is essential to develop vaccines against fish pathogens.

Research Advancement of CIFE:

CIFE has developed a DNA vaccine against *E.tarda,* and protective efficacy of the vaccine has been tested at laboratory scale in *Labeo rohita*. The vaccine has shown 70% protective efficacy in Rohu fingerlings. Further, an effective delivery method for its administration has also been developed. This novel technology combining vaccine and delivery method has been scientifically proven sturdy, safe and efficient against *E tarda*. So far the technology has been tested for *Labeo rohita* (Rohu), but the technology can be simulated for other economically important fish species also.

Approximate Production Cost of Vaccine:

If the cost is considered for bulk production of vaccine it will be around 10 rupees for vaccinating 1000 fingerling (considering 120 mg plasmid per 8 litre). This is the cost based on laboratory consumables. The cost can be reduced even further at industry level. The vaccine technology will be suitable for fish cultured in cages.

Therefore ICAR-CIFE, Mumbai, calling for EOI from Industrial partner/s to commercialize the DNA Vaccine against *Edwardsiella tarda* for Biotechnology Industry Research Assistance Council (BIRAC) funding Project. The field testing of DNA vaccine against infectious fishes is also one of its objective.

General Instructions :

- Interested industrial partners who like to apply may visit the website: **www.cife.edu.in** for detailed information regarding requisite qualification, experience and **Terms of Reference** for partnership or obtain further information at the address given below on any working days from 1000 to 1700 hours.
- Expression of Interest must be submitted in hard copies to the address given below.
- Further enquiry regarding above may be obtained from, ITMU/ABI Office, CIFE, Mumbai (Extension No. 457 and Mob - 9619129422
- **Address for Correspondence –**

  Central institute of Fisheries Education, New Campus, Panchmarg, Off Yari road, Verosva, Andheri west, Mumbai -400061

  Please visit the website of DBT, BIRAC http://www.birac.nic.in for further clarifications and term & conditions. Also refere the attached proforma for necessary information.

General Terms of References

Types of projects to be supported	❖ Projects with well-established proof-of-principle leading to development of prototype of a product/technology of national relevance or commercial potential (Basic/exploratory research, projects without well-established proof of principle or with no or low commercial potential will not be supported)
Duration of project	❖ Up to 18 months (BIRAC's Technical Expert Committee at its discretion may recommend for increased duration of the project depending upon the nature of the research study)
Funding Support (Grant)	❖ Total cost of the project must not exceed Rs. 50 lakhs (Non-recurring cost must not exceed 10 % of the total cost)
IPR	❖ IP rights may be with academia alone, or jointly shared between academia and industry (if academia establishes PoC with industry) as per the understanding between the two partners
Eligibility criteria for Industry partners	❖ Under the scheme, academia (Public or Private Institute, University, NGO, or Research Foundation) having a well-established support system for research shall be the primary applicant. It can apply either: (1) Individually, or (2) Jointly with academic * and /or industrial ** partner ❖ For public or private institute, University, NGO, or Research Foundation, paper registration/accreditation from a government body is mandatory ❖ The applicant company should have adequate in-house facility to address the project implementation or incubated with any of the recognized incubation facility
Vaccine features	❖ High protective efficacy (70%) ❖ Novel vaccine delivery technology for maximizing uptake ❖ Limited DNA residual period in host tissue ❖ No environmental escape of DNA ❖ Economical for commercial production

	❖ Easy storage
Contact address:	Interested candidates may submit their **"Expression of Interest'** and related queries. • director@cife.edu.in • megha.bedekar@cife.edu.in