



## IN OVO IMMUNE STIMULATION – A TOOL TO IMPROVE FISH LARVAE HEALTH

### TOPICS:

Aquaculture; Animal health; Fish larvae; Innate immunity

### IDEA / PROPOSAL:

The high and unpredictable mortality of fish larvae in the first weeks after hatching remains a challenging problem for the aquaculture sector that needs to be solved. Both scientific evidence and hatchery experience across various fish species, support the hypothesis that detrimental fish-microbe interactions are contributing to this problem. Among the recommended strategies to prevent these health problems is the induction of larvae immune capacity. Bearing this in mind, the major objective of this work is to evaluate the potential of stimulating the developing embryo immune system at the earliest possible point by delivering immunostimulants directly to fish eggs. By using a molecular transporter and a bath immersion protocol instead of microinjection, administration of the immunostimulant can be scaled up to simultaneously treat many eggs in a highly versatile and potentially cost-effective manner suitable for its application in the industry. As a starting point, we will try this innovative method on zebrafish eggs. The main methodologies to be used include in vitro fertilization, fluorescence microscopy, microbiology techniques, infection of fish larvae using micromanipulation techniques and gene expression analysis.

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