A comprehensive and collaborative approach is critical to promote successful shrimp aquaculture

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Abstract:

Aquaculture development aligns with the United Nations Sustainable Development Goals (SDGs), including SDG 2 [Zero hunger], SDG13 [Climate action] and SDG 14 [Life below water]. Asia is the world's largest producer of shrimp aquaculture, with >70% of total global production. For decades, the biggest challenge to this industry has been infectious diseases, especially white spot disease (WSD) and acute hepatopancreas necrosis disease (AHPND), as listed by the OIE [World Organization for Animal Health]. Therefore, reducing the threat of infectious disease outbreaks has always been important in shrimp aquaculture management. In this talk, we will reflect on the journey to date and look forward to the future for research to evidence and shape shrimp health management. Various omics technologies and approaches and integrated systems-biology have been critical to generate new knowledge and elucidate WSSV and AHPND pathogenesis, physiological constraints, and metabolism in shrimp. In addition, many complex molecular mechanisms involved in shrimp immunity, host-pathogen interactions, and the crucial roles of environment and microbiota in disease pathogenesis have been discovered. Furthermore, new knowledge from these holistic omics approaches has been used for evidence-based approaches to breeding, disease management and biosecurity in shrimp aquaculture. Taken together, to combat such multi-factorial diseases, it is essential to use a comprehensive strategy involving a collaborative effort from the global shrimp research community.