

**Faculty Talk: Insightful Seminar Series**  
**Faculty of Livestock, Fisheries, and Nutrition**  
**Wayamba University of Sri Lanka**

**Topic**

**RNA-seq Based Identification and Functional Validation of Differentially Expressed Genes in Marine Fish**

**Overview**

This study integrates RNA-Seq analysis, draft genome assembly, and functional validation to explore the molecular mechanisms of immune responses in the red spotted grouper (*Epinephelus akaara*) under bacterial and viral stimulation. RNA-Seq was used to identify differentially expressed genes (DEGs) in response to these challenges, providing insights into the genetic pathways involved in pathogen recognition, immune signaling, and stress responses. The draft genome assembly served as a reference for accurate gene annotation and DEG analysis, enhancing our understanding of the grouper's genetic architecture. Another key focus was the functional validation of the RIG-I-like receptor (RLR) signaling pathway, a crucial component of that regulate antiviral immune response in fish. By overexpressing, we validated the involvement of specific genes within the RLR pathway, shedding light on their role in pathogen defense. Altogether, this research advances our understanding of the molecular basis of disease resistance in the red spotted grouper and offers valuable insights for improving aquaculture practices, including the development of disease-resistant strains and overall fish health management.

**Speaker**

**Dr. W.M. Gayashani Sandamalika, Senior Lecturer**

Department of Aquaculture and Fisheries, Faculty of Livestock, Fisheries, and Nutrition  
Wayamba University of Sri Lanka



Dr. Gayashani Sandamalika received her bachelor's degree (B.Sc.) from the Faculty of Fisheries and Marine Sciences, University of Ruhuna, Sri Lanka (2012), specialized in the field of oceanography & marine geology. She later pursued her postgraduate studies at the department of Marine Life Sciences, College of Ocean Sciences, Jeju National University, Jeju, South Korea, where she obtained both her MSc (2019) and PhD (2022) degrees, working with the Marine Molecular Genetics Laboratory.

Dr. Sandamalika's research focuses on molecular biology, genetics, computational and functional genomics in aquaculture, epigenetics, and genome-wide association studies (GWAS).

**Moderator**

**Dr. W.A. Harindra Champa, Chairman, Research Development and Publication Committee, Faculty of Livestock, Fisheries and Nutrition**

**Date & Time**

**11:30 AM - 12:00 Noon on 08<sup>th</sup> January, 2025**

**Venue**

**Aquaculture & Fisheries Lecture Room, Faculty of Livestock, Fisheries and Nutrition**

**Contact**

For inquiries, please contact Dr. W.A. Harindra Champa, Chairman, RDPC, FFLN, WUSL.  
Email: [harindra.bsu@wyb.ac.lk](mailto:harindra.bsu@wyb.ac.lk)

**Organized by: Research, Development and Publication Committee**  
**Faculty of Livestock, Fisheries, and Nutrition**