

THE SHRIMP GENOME AND EPIGENOME (ShrimpENCODE) SESSION: IN MEMORY OF DR. DONALD V. LIGHTNER

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The ShrimpENCODE session is dedicated to the memory of shrimp pathologist Dr. Donald V. Lightner (1945-2021). The session will address the following topics: epigenetic regulation in aquatic micro-invertebrates: a non-canonical system of bacterial origin; genome sequencing and assembly strategies and comparative analysis of the genomic characteristics of Penaeid shrimp species; the genomes, epigenomes, and transcriptomes of *Penaeus vannamei*, *P. monodon*, *P. japonicus*, *P. chinensis*, and *P. indicus*; 312 transposable elements characterized from the first specific pathogen-free (SPF) *P. vannamei* produced by the breeding program of the U.S. Marine Shrimp Farming Program (USMSFP); the complete genome of an endogenous nimavirus (*Nimav-1_LVa*) integrated in the genome of SPF *P. vannamei* - the need for fully-assembled, contiguous reference genomes of penaeids and other crustaceans to study virus evolution and pathogenicity; white spot syndrome virus (WSSV) from Ecuador, endogenous viral elements (EVE) of WSSV (WSSV-EVE) and endogenous nimavirus *Nimav-1_LVa*: their integration in the genomes of the original SPF *P. vannamei* produced in the U.S. and *P. vannamei* farmed in China; EVEs of *Decapod penstylhamaparvovirus 1* (Infectious Hypodermal and Hematopoietic Necrosis Virus, IHNV) – implications for shrimp diagnosis; *P. monodon* endogenous Type-A IHNV integrated in the genomes of *P. monodon* from Thailand and *P. vannamei* from China; chromosomal locations of *RTE-3_LVa* a non-LTR retrotransposon identified in the first SPF *P. vannamei* produced in the US: a potential sex marker for shrimp; understanding of the shrimp immune response to pathogens from its transcriptome; estimation of linkage disequilibrium and effective population size in a *P. vannamei* population using a novel 50K SNP genotyping array; the hurdles of delivery CRISPR-Cas9 components for gene editing in penaeid shrimps; assessment of the oxidative stress and bio-transformation enzymatic effects of glyphosate exposure on *P. vannamei*; virus interference and occurrence in crustaceans; the *NonLTR-1_LVa* retrotransposon from the first SPF *P. vannamei* domesticated in the USA is similar to a retrotransposon putatively associated with abdominal segment deformity disease (ASDD) of farmed *P. vannamei* from Thailand; the developmental biology of penaeid shrimp; and White Paper: the need to sequence the genomes of *Penaeus Fabricius*, 1798 species to confirm taxonomy classification accepted by The World Register of Marine Species (WoRMS), among others.

Two female researchers, leaders of the genome sequencing projects of *P. vannamei* (Fuhua Li, China) and *P. monodon* (Nitsara Karoonuthaisiri, Thailand) will be recognized as 2022 'Outstanding ONE HEALTH Researchers in Aquaculture' by the Foundation for Conservation of Biodiversity (FUCOBI) of Ecuador. Twenty-four students, postdocs and research associates from 15 countries (Belgium, Chile, China, Colombia, Ecuador, Honduras, India, Mexico, Nigeria, Philippines, Romania, Taiwan, Thailand, United Kingdom, United States) will be recognized as winners of the 2022 'Johnnie Castro Montealegre Travel Awards' by the FUCOBI Foundation.