Abstract

Background: Largemouth bass virus (LMBV; family *Iridoviridae*, subfamily *Alphairidovirinae*, genus *Ranavirus*) is associated with lethal disease of North American bass species (*Micropterus salmoides*; *M. floridanus*). LMBV was first observed in Lake Weir, Florida, in 1991, and the virus was first associated with mortality of largemouth bass in the wild during a fish kill in Santee Cooper Reservoir, South Carolina, in 1995. Since then, outbreaks of LMBV have been observed throughout the Midwestern and Southern United States and in Asia. Significant symptoms of LMBV disease include lesions and over-inflation of swim bladders, which alter equilibrium and prevent the submergence of infected hosts. LMBV has been isolated from other centrarchid species, such as striped bass (*Morone saxatilis*) and smallmouth bass (*Micropterus dolomieu*). Since 2005, outbreaks of LMBV disease in smallmouth bass have been reported from several water bodies in Pennsylvania, Michigan, and Wisconsin. In September 2021, 14 wild smallmouth bass with ulcerated skin lesions were collected from the waters surrounding Door County, Wisconsin, and submitted for diagnosis. All samples tested positive for LMBV. Despite the repeated detection of LMBV in smallmouth bass, no genomic sequencing and characterization efforts have been conducted to elucidate viral taxonomy and evolution, host range, and interspecies transmission events. In this project, the student will isolate and sequence the complete genome of LMBV from the infected 2021 smallmouth bass samples. Subsequently, the student will perform phylogenomic analyses by comparing LMBV recovered from the samples mentioned above to other ranavirus sequences to determine viral taxonomy and species or strains variations, if any.

The significance for Veterinary Medicine and the student: The student will learn the basics of cell culture, virus isolation, next-generation sequencing, and phylogenomic analysis. This research is feasible within the 3-month internship and Dr. Subramaniam and his team will work closely with the student to ensure success. The student also encouraged to develop their own poster and present it at the Emerging Pathogen Institute research day and UF CVM Phi-zeta day.