Microbiome assembly in young Pacific white shrimp

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Video Byte

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Abstract

Litopenaeus vannamei, or Pacific white shrimp, is the most productive shrimp species in the aquaculture industry. The health of the larval microbiome has long-term implications for the health of adult shrimp. However, assembly of the microbiome during larval development is not well understood. In a new study, researchers used 16S rRNA gene amplicon sequencing to characterize the microbiome of shrimp larvae over time. They found that the assembly of taxa was largely governed by neutral processes — dispersal among larvae and ecological drift. The alpha-diversity and taxa complexity showed a U-shaped pattern, with the highest diversity and complexity at the early and late stages of development. During zoea stage, the larval microbiome was most associated with that of the surrounding water. From the mouth-opening stage forward, Rhodobacteraceae became the dominant taxa. This study will help researchers and farmers understand how to protect the health of shrimp cultures through their growth period. Future work will focus on Rhodobacteraceae as a candidate for probiotic treatments and explore environmental influences on larval microbiome assembly.