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The Sydney rock oyster microbiome is influenced by local environmental parameters and QX disease resistance

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Sydney rock oysters, (SRO: *Saccostrea glomerata*) are a native species in Australia and the most important aquaculture species in the state of New South Wales (NSW). However, production of this species has declined significantly since the mid-1970s, in part due to the impacts of mortality events associated with QX (Queensland unknown) disease. QX disease is caused by a spore-forming protozoan parasite called *Marteilia sydneyi* however; the presence of the parasite does not necessarily result in QX disease indicating the role of environmental and/or host-specific factors in disease progression. Another potential factor in QX disease is the microbiome of the SRO; however, little research has been conducted into the microbiome of this oyster species. In this study, we examined the microbiome of six families from the SRO breeding program with differing resistance to QX disease (two highly resistant, two with intermediate resistance and two susceptible) deployed in two different locations using 16S rRNA (V1 – V3 region) amplicon sequencing. The broad aim of this study was to determine the effect of local environmental parameters and disease resistance on the microbiome of the SRO. Our results show that microbiomes of SRO families significantly differed between the two deployment locations of Port Stephens and Wallis Lake (NSW), and between our two sampling points in the Austral summer and winter. Additionally, the SRO microbiome was influenced by QX disease resistance at Port Stephens at both time points with the susceptible lines significantly differing from the resistant and intermediate families. However, in Wallis Lake, the influence of host-specific QX disease resistance was not consistent over the two seasons suggesting that environmental factors can overcome the influence of host genetic factors.

Biography

Viet Khue Nguyen completed his Bachelor in Aquaculture from Nha Trang University of Fisheries, Vietnam. He has worked at the Department of Fish Disease in the Research Institute of Aquaculture No1, Vietnam for more than 10 years. He is an author and co-author of 10 academic papers. Currently he is completing his PhD at the University of Technology Sydney, Sydney Australia investigation the microbiome of Sydney rock oysters.

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