

A review of molecular identification and tracking techniques for *Vibrio harveyi*

Within the bacterial genus *Vibrio* the number of species has increased notably, especially for the Harveyi clade. This clade includes nine species with strains described as highly pathogenic to humans and/or marine animals. Within the Harveyi clade, *V. harveyi* and related species, have been recognized as some of the most significant pathogens to marine reared animal species, causing major economic losses in the aquaculture industry worldwide. Ana Cano-Gomez and her colleagues reviewed the existing techniques used for identification of *V. harveyi*-related species and explored the potential prospects of designing specific molecular techniques to detect these pathogens. The difficulty in the diagnosis of *V. harveyi*-related infections resides in the failure of standard identification techniques, such as phenotypic tests and 16S rRNA analysis, due to the existence of several species in the Harveyi clade sharing nearly indistinguishable phenotypes and genotypes.

Implications of this research and describing a new species, *Vibrio owensii*

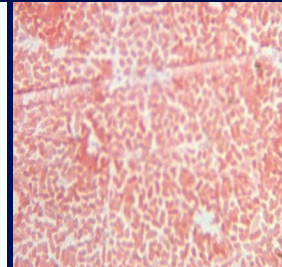
Using molecular methods highlighted in their previous review on identification techniques, Ana and her colleagues isolated and identified virulent *Vibrio* strains from diseased cultured larvae of ornate spiny lobster (*Panulirus ornatus*) at AIMS, and from tiger prawn (*Penaeus monodon*) at a NQ prawn farm. The authors demonstrated that while the two bacterial isolates shared many characteristics with *V. harveyi*, *V. campbellii* and *V. rotiferianus*, the strains could be differentiated from all *Vibrio* species described previously. The new species was named *Vibrio owensii* to honor Professor Leigh Owens as a specialist in the biology of *V. harveyi*-related species.

Why is this research important?

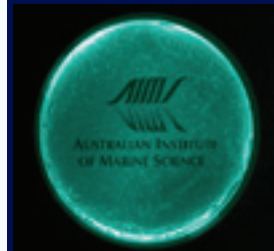
Although *V. harveyi* was recognized as the most significant member of the *V. harveyi*-related group, studies have suggested that its common misidentification with other vibrios could have undervalued the importance of *V. campbellii*, *V. rotiferianus* and recently *V. owensii* as pathogens of marine reared and wild species of fish, crustacean, shellfish, and corals. The contribution of Ana Cano-Gomez and her colleagues to the field of *Vibrio* molecular-based identification is therefore of economic importance for the diagnosis of bacterial infections in the aquaculture industry. In order to detect and prevent the spread of pathogenic strains in aquaculture systems, different molecular methods for direct detection and quantification of *V. harveyi*-related pathogens are needed.

References:

- Cano-Gomez, A., Goulden, E.F., Owens, L and L. Hoj. 2010. *Vibrio owensii* sp. nov., isolated from cultured crustaceans in Australia. FEMS Microbiology letters 302: 175-181.
- Cano-Gomez, A., Bourne, D.G., Hall, M.R., Owens, L and L. Hoj. 2009. Molecular identification, typing and tracking of *Vibrio harveyi* in aquaculture systems: Current methods and future prospects. Aquaculture 287: 1-10.



V. owensii type strain DY05 isolated from diseased *P. ornatus* larvae under the microscope. Photo taken by ACG



Luminescent strain oz07 of *V. campbellii* isolated from diseased larvae of *P. ornatus* at AIMS. Photo taken by ACG

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