Localization and Binding Capabilities of Crustins in the Pacific Whiteleg Shrimp, *Litopenaeus vannamei*

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Crustins are a family of antimicrobial peptides originally discovered in the shore crab, and to date includes several types found in many crustacean species, including *Litopenaeus vannamei*. Studies suggest crustins have antibacterial action primarily against Gram positive bacteria, with only one report of its *in vitro* activity against a Gram negative species. The crustin peptides are constitutively expressed, and are present in large quantities even in unchallenged animals. In this study, the localization and bacteria binding properties of crustins *in vivo* are being assessed in "healthy" non-immune challenged shrimp. For native peptide localization, hemocyte smears and tissue sections were subjected to immunohistochemistry using a crustin-specific (C-terminal polyclonal) antibody, and crustins were detected within a population of hemocytes and within different tissue samples, most notably the gills and lymphoid organ. In order to test crustins' ability to act as indirect antimicrobial agents, hemolymph samples were exposed to Gram negative *Vibrio penaeicida*, and crustin was determined to bind these shrimp pathogens both by a bacteria bead binding assay and by immunohistochemistry. The results suggest that crustins are providing antibacterial activity by binding to bacteria.

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