

## YHV-Responsive Gene Expression under the Influence of PmRelish Regulation

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**Abstract :** In animals, infection by Gram-negative bacteria and certain viruses activates the Imd signaling pathway wherein the a NF- $\kappa$ B transcription factor, Relish, is a key regulatory protein for the synthesis of antimicrobial proteins. Infection by yellow head virus (YHV) activates the Imd pathway. To investigate the expression of genes involved in YHV infection and under the influence of PmRelish regulation, RNA interference and suppression subtractive hybridization (SSH) are employed. The genes in forward library expressed in shrimp after YHV infection and under the activity of PmRelish were obtained by subtracting the cDNAs from YHV-infected and PmRelish-knockdown shrimp with cDNAs from YHV-infected shrimp. Opposite subtraction gave a reverse library whereby an alternative set of genes under YHV infection and no PmRelish expression was obtained. Sequencing of 252 and 99 cDNA clones from the respective forward and reverse libraries were done and annotated through blast search against the GenBank sequences. Genes involved in defense and homeostasis were abundant in both libraries, 31% and 23% in the forward and reverse libraries, respectively. They were predominantly antimicrobial proteins, proteinases and proteinase inhibitors. The expression of antimicrobial protein genes, ALFPm3, crustinPm1, penaeidin3 and penaeidin5 were tested under PmRelish silencing and Gram-negative bacterium *V. harveyi* infection. Together with the results previously reported, the expression of penaeidin5 and also penaeidin3 but not ALFPm3 and crustinPm1 were under the regulation of PmRelish in the Imd pathway.

**Keywords :** relish, yellow head virus, penaeus monodon, antimicrobial proteins

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