



# Molecular Cloning and Expression of White Spot Syndrome

## Virus Induced Proteins of Black Tiger Shrimp

*(Penaeus monodon)*

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### Abstract

In spite of the importance of viral diseases, there is little knowledge of the nature of the interaction between shrimp or crustaceans and these viral pathogens. To address this lack of knowledge and to overcome the difficulties of identifying minute amounts of biomolecules, PCR-coupled subtractive hybridization was applied with cDNA from viral-infected and non-infected shrimp to identify factors related to the responses. Among the 45 known sequences, three genes, Pm-Syntenin, Pm-TCTP and Pm-PTK were chosen according to their potential functions in the signal transduction pathways predicted by bioinformatics data. Pm-Syntenin has 1,458 nucleotides composed of 969 bp open reading frame (ORF) encoding 322 amino acids with predicted pI = 7.11. Pm-TCTP is 702 bp in length, containing 507 bp ORF encoding 168 amino acids with calculated pI = 4.5. Pm-PTK has 1,298 nucleotides composed of 1,047 bp ORF encoding 348 amino acids with predicted pI = 6.15. The recombinant Pm-syntenin, Pm-TCTP and Pm-PTK expressed in *Escherichia coli* have a molecular mass of approximately 35 kDa, 25 kDa and 40 kDa with histidine tag, respectively. Characterization studies showed that Pm-Syntenin is up-regulation in WSSV-infected shrimp, and does not bind to human syndecan but to horseradish peroxidase (HRP). Pm-TCTP is less abundant in moribund samples; it does not bind IgE and it is a calcium-binding protein.