



# Molecular Characterization of Shrimp White Spot Syndrome Virus by Genomic and Proteomic Approaches

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**ABSTRACT:** White spot syndrome virus (WSSV), the type species of the genus *Whispovirus*, family *Nimaviridae*, is an enveloped, ellipsoid, large (>300kbp) double-stranded DNA virus. Microarray analyses have shown that at least 89.5% (476/532) of its ORFs are expressed in the gill tissue of WSSV-infected shrimp (*Penaeus monodon*). After using gradient SDS-PAGE separation of intact WSSV virions to produce a comprehensive protein profile. LC-nanoESI-MS/MS techniques identified 33 WSSV structural proteins from 34 bands, bringing the total number of reported WSSV structural proteins to 39. One of these structural proteins, VP664, is the largest viral structural protein ever found. This proteomic analysis has not only placed the structural proteins of WSSV on a genetic basis and opened the way for further studies, but by combining this technique with immunoelectron microscopy, we also demonstrated that, contrary to earlier reports, VP664 is in fact the only major nucleocapsid protein. Meanwhile, to investigate shrimp gene expression in WSSV-infected vs non-infected shrimp, we constructed two cDNA libraries, PmTwI (WSSV-infected) and PmTwN (non-infected). Clones (8,064 and 7,200, respectively) were randomly selected from these libraries and sequenced to generate an EST database. Transcription of many of the shrimp genes was either up or down regulated after WSSV infection. These genes were responsible for housekeeping, defense, growth and other biological functions. In addition to these genes, several other known and novel unique sequences were also differentially expressed.

**Date:** 17 Sept 2004, Fri  
**Time:** 4 - 5 pm  
**Venue:** LT 20  
**Host:** Prof Hew Choy Leong

**Department of Biological Sciences**  
Seminar Announcement

All are welcome