



# Molecular cloning and expression analysis of female sterile homeotic gene (*fsh*) in the oriental river prawn *Macrobrachium nipponense*

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**ABSTRACT.** The gene *female sterile homeotic (fsh)* plays crucial roles in molecular function, including protein kinase activity and DNA binding, which are involved in biological processes such as terminal region determination and negative regulation of DNA-dependent transcription. Although *fsh* has been found in *Drosophila melanogaster*, little is known regarding its expression in crustaceans. In this study, a *fsh* gene homologue, designated as *Mnfsh*, was cloned and characterized from the testis of the oriental river prawn, *Macrobrachium nipponense*, by using EST analysis and the RACE approach for the first time. The full-length cDNA of *Mnfsh* was 2029 bp, consisting of a 5' UTR of 361 bp, a 3' UTR of 216 bp, and an ORF of 1452 bp encoding 484 amino acids. qRT-PCR analysis showed that the *Mnfsh* gene was expressed in the testis, ovary, muscle, heart, eyestalk, and abdominal ganglion, with

the highest level of expression in the ovary and the lowest in the heart. qRT-PCR analyses showed that the expression levels of *Mnfsh* mRNA both significantly increased in the zoea stage, the VII larvae, and 1st day post-larvae after metamorphosis. In conclusion, the results of the present study indicate that *Mnfsh* is an arthropod *fsh* homologue and probably also plays important roles in embryogenesis, organogenesis, and morphological differentiation of *M. nipponense*.

**Key words:** Female sterile homeotic (*fsh*); *Macrobrachium nipponense*; Gene cloning; Gene expression