



Identification of androgenic gland microRNA and their target genes to discover sex-related microRNA in the oriental river prawn, *Macrobrachium nipponense*

S.B. Jin^{1,2}, H.T. Fu^{1,2}, S.F. Jiang², Y.W. Xiong², H. Qiao², W.Y. Zhang², Y.S. Gong² and Y. Wu²

¹Wuxi Fisheries College, Nanjing Agricultural University, Wuxi, China

²Key Laboratory of Freshwater Fisheries and Germplasm Resources Utilization, Ministry of Agriculture, Freshwater Fisheries Research Center, Chinese Academy of Fishery Sciences, Wuxi, China

Corresponding author: H.T. Fu

E-mail: fuht@ffrc.cn

Genet. Mol. Res. 14 (4): 18396-18406 (2015)

Received August 16, 2015

Accepted October 30, 2015

Published December 23, 2015

DOI <http://dx.doi.org/10.4238/2015.December.23.27>

ABSTRACT. The oriental river prawn, *Macrobrachium nipponense*, is an important aquaculture species in China. The androgenic gland produces hormones that play crucial roles in the differentiation of crustaceans to the male sex. MicroRNA (miRNA) post-transcriptionally regulates many protein-coding genes, influencing important biological and metabolic processes. However, currently, there is no published data identifying miRNA in *M. nipponense*. In this study, we identified novel miRNA in the androgenic gland of *M. nipponense*. Using the high-throughput Illumina Solexa system, 1077 miRNA were identified from small RNA libraries by aligning with the *de novo* androgenic gland transcriptome of *M. nipponense* (obtained from RNA-Seq) and the sequences in the miRBase21 database. A total of 8,248, 76,011, and 78,307 target genes were predicted in the EST and SRA sequences provided in the NCBI database, and the androgenic gland transcriptome of *M. nipponense*, respectively. Some potential sex-

related miRNA were identified based on the function of the predicted target genes. The results of our study provide new information regarding the miRNA expression in *M. nipponense*, which could be the basis for further genetic studies on decapod crustaceans.

Key words: *Macrobrachium nipponense*; Androgenic gland; microRNA; Targeted genes; Sex-determination