Molecular genetic analysis of heterosis in interspecific hybrids of *Argopecten purpuratus* x *A. irradians irradians*

L.P. Hu¹², X.T. Huang¹, Y. Sun¹, J.X. Mao¹, S. Wang¹, C.D. Wang³ and Z.M. Bao¹

¹Key Laboratory of Marine Genetics and Breeding, Ministry of Education, Ocean University of China, Qingdao, Shandong, China
²Yantai Fisheries Research Institute, Yantai, Shandong, China
³College of Marine Science and Engineering, Qingdao Agricultural University, Qingdao, Shandong, China

Corresponding author: X.T. Huang
E-mail: xthuang@ouc.edu.cn

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ABSTRACT. *Argopecten purpuratus* and *Argopecten irradians irradians* hybridization was successfully performed and the hybrid offspring displayed apparent heterosis in growth traits. To better understand the genetic basis of heterosis, the genomic composition and genetic variation of the hybrids were analyzed with amplified fragment length polymorphism (AFLP) and simple sequence repeat (SSR) markers. Seven of eight universal SSR primers displayed polymorphism in the hybrids and their parental groups, and hybrids inherited both parental genotypes at each locus. Using five primer combinations in AFLP analysis, 433 loci were amplified in the hybrids and their parental groups. The frequency of polymorphisms was 88.22%. F1 hybrids inherited 88.11 and 92.88% of AFLP bands from their parents. Some loci did not follow Mendelian Law, including 48 loci in parents that were lost, and 11 new loci that were amplified in the hybrids. The parameters of Nei’s gene di-
versity, Shannon’s Information index, genetic distance, and molecular variance between groups were calculated. The genetic differentiation between two hybrid groups (0.253) was smaller than that between hybrids and their parents (0.554 to 0.645), and was especially smaller than that between two parental groups (0.769). The high genetic similarity (0.9347) and low genetic differentiation (0.2531) between two hybrid groups suggests that these hybrid groups were genetically very close. Heterozygosities of hybrid groups were higher than those of parental groups, indicating that the hybrids had increased genetic diversity.

**Key words:** AFLP; *Argopecten*; Heterosis; Hybrid; SSR