

Genomic Molecular Markers for the DNA Fingerprinting of Sperm Derived from *Epinephelus lanceolatus* and *E. fuscoguttatus*

ABSTRACT

Groupers belong to the subfamily Epinephelinae of the family Serranidae. They are an economically important marine fisheries resource and are commercially cultivated throughout the tropical and temperate regions of the world. The aquaculture industry relies on artificial breeding of groupers in order to obtain fingerlings which are free of pathogens and demonstrate a uniform growth rate. Rapid validation of sperm and eggs is a major challenge to breeders. Single locus DNA markers are ideal for the authentication of germplasm as they generate single PCR amplicons which do not require further sequencing. This study focused on the development of single locus DNA markers for genotyping of sperm samples derived from two species of grouper, the Giant grouper (*Epinephelus lanceolatus*) and the Tiger grouper (*E. fuscoguttatus*). Single locus molecular markers were developed using DNA sequences obtained from shotgun genomic libraries and tested against sperm samples derived from each of the species and the closely related groupers *E. coioides* and *E. corallicola*. A total of 54 molecular markers were developed of which six were found to be specific to *E. fuscoguttatus* and seven to *E. lanceolatus*. The remaining markers generated PCR products in all of the four species and were rejected as suitable candidates for genotyping. The markers developed as a result of this study are relevant to fish breeders and fish farmers as they are species specific, inexpensive and augment traditional methods of identification based on phenotypic characterization.