Oceanography-2013
OMICS Group Conferences
Accelerating Scientific Discovery
International Conference on
Oceanography
August 21-23, 2013 Orlando-Florida, USA

Marine fish genetic resources cryoperservation and application in breeding

Qinghua Liu
Chinese Academy of Sciences, China

Abstract

Genetic resources and biodiversity have become an international focal issue. The wealth of germplasm resource is one of the most important index to measure the capability of sustainable development and comprehensive national strength for a country. Cryopreservation is an efficient method for genetic resource preservation. Germ cells (sperm, egg, PGCs, etc.), embryos and larvae of the special species in danger and species with special economic or scientific importance, can be cryopreserved for long term in the established genetic bank of marine biology, before future utilization (breed or surrogate brood after recover). Since 2003, we have built a germplasm bank form marine animals in Institute of Oceanology, Chinese Academy of Sciences. The cryopreserved methods of sperm, embryos and larva for marine fishes, shellfishes and jellyfish have been established, and the established germ plasm resource bank of marine animals, contained over 15,000 mL sperm including more than 20 species with high economic importance, such as large yellow croaker, red seabream, olive flounder, abalone, oyster, jellyfish, etc. The cryopreserved sperm has been successfully applied to the artificial breeding, hybrids production and gynogenetic diploids induced by heterologous sperm. Using the cryopreserved sperm, we have produced 3 million hybrids fry (summer flounder♂× olive flounder♀). Besides, 600 ml/year of the sperm from the red seabream has been applied in gynogenesis and multiploid induction of turbot, olive flounder and southern flounder. In addition, major progress has been achieved in the cryopreservation of marine fish embryos. High revival rate has been optimized at -30º and -40ºC. Besides, we have got 24 survival embryos with normal hatch and development after programmable freeze and vitrification methods. Furthermore, we isolated and cryopreserved the labeled PGCs and spermatogonia successfully. The results serve for the germ cell manipulation and provide an ideal alternative method for preservation of genetic resource of marine fish.

* The author gratefully acknowledges the support of K.C. Wong Education Foundation, Hong Kong

Biography

Qinghua Liu, Ph.D, associated professor, Institute of Oceanology, Chinese Academy of Sciences. Her reseach areas are: fish reproductive physiology, reproduction, development of marine fish species and genetic resource cryopreservation. She has published more than 40 papers and serving as reviewer for some reputed journals.