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Characterization of the Zebrafish ghost(gho) Mutant

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Abstract

We conducted a large scale ENU mutagenesis screen using zebrafish as a model to study the genetic mechanisms of craniofacial and tooth development. An early lethal mutant ghost(gho) phenotype was identified, and mapped by a previous study to LG17 between markers z24082 (34.2cM) and z9847 (40.9cM) on the MGH map. This study investigates the molecular nature of the gho phenotype, using whole mount in situ hybridization(WISH) analyses of neural crest cell and the pharyngeal arch expressed genes. Identified signalling pathways could be used in future functional studies to characterize how the gho mutant gene affects neural crest cell migration and differentiation. We found that gho is most probably an early-expressed gene responsible for segmentation of neural crest cells in the rhombomeres before migration occurs. The gho mutant gene is essential in embryonic development and affects other genes which have later spatiotemporal expressions.

評語

Gho mutant gene is essential for embryonic development and may significantly affect the gene for spatiotemporal expressions. This experiment was performed as the study of molecular nature for gho phenotype using zebrafish as a model. Mr. Chow has been considered to be deeply involved in the project. He was skilful in gene manipulation using zebrafish. The results obtained from the present study was sufficient to characterize gho gene expression in zebrafish. We are very impressed by his performance.