Identification of zebrafish genes affecting motor neuron development

The zebrafish genome has been completely mapped and sequenced, but the roles of most genes in the development and physiology of the organism remain unknown. Therefore, efforts are underway to systematically inactivate gene expression in order to understand the functions of specific genes. Antisense morpholino oligonucleotides (morpholinos) have been used successfully to block the expression of zebrafish genes by interfering with translation of mRNA. Researchers at the University of Minnesota have launched a broad effort using morpholinos to systematically screen the zebrafish genome for genes affecting various developmental and physiological processes. My project has been to participate in the effort to identify genes involved in branchiomotor neuron development as a part of the antisense screening program launched by the University of Minnesota. Of the thirty six morpholinos I have screened so far, seven generated a specific change in the patterning or migration of branchiomotor neurons, indicating that the genes targeted by these morpholinos may play some role in the development of these neurons. We will next carry out a detailed characterization of the genes identified by the morpholino assays.

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