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Funding Source: Life Sciences Undergraduate Research Opportunity Program

Identification of genes regulating branchiomotor neuron development and migration

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During development, branchiomotor neurons (BMNs), which innervate the muscles in the head must undergo specification and migrate to their appropriate positions along the hindbrain in order to assure the proper function of underlying muscles. Green fluorescent protein (GFP) expressed in BMNs is used to track this neuronal development. To better understand how specification and migration are regulated, zebrafish genes were systematically screened for their roles in neuronal development by microinjection of antisense morpholino oligonucleotides (morpholinos) into embryos to inhibit their expression. Of 17 genes tested, several were found to affect BMN migration as well as embryonic morphology. Among the genes screened, FK506BP1 A and gp25L2 2 which encode rotamase and glycoprotein 25L2 respectively, have produced abnormal BMN phenotypes which warrant future study.