Reduction of Movement by *flp-11*, which Encodes FMRFamide-related Peptides

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FMRFamide-related peptides (FaRPs) make up a large and diverse family of *C. elegans* neuropeptides. To learn how these peptides control *C. elegans* behavior, we overexpressed genes predicted to encode FaRPs (the *flp* genes) and characterized the resulting behavioral defects. Overexpression of *flp-11* from an integrated transgene greatly reduces locomotion compared to the wild type. We quantified this reduction in movement using a wormtracker (developed by Damon Clark, Aravi Samuel, and Dan Omura) and found that the average speeds of *flp-11* transgenic strains are less than 50% of the wild-type speed. We also quantified locomotion by body bend counts: *flp-11* overexpressors execute 70% fewer body bends per unit time than the wild type. The overexpressors lay motionless more often and, when they are moving, move more slowly than normal.

To identify genes involved in the *flp-11* overexpression phenotype, we screened EMS-mutagenized *flp-11* overexpressors for suppressors of the locomotion defect. An F2 non-clonal screen of 20,000 haploid genomes yielded 1 suppressor, and an F1 clonal screen of 2,500 haploid genomes isolated 2 suppressors. These suppressors all exhibit average speeds similar to the wild-type speed. We are currently mapping these 3 suppressors. We are also planning to measure the speed of a *flp-11* deletion mutant.

To identify neural circuits that use *flp-11* to control behavior, we have constructed a *flp-11::GFP* translational fusion reporter gene. Transgenic worms show GFP expression in a single cell near the posterior bulb of the pharynx. We plan to characterize the functions of *flp-11*-expressing cells by laser-ablation experiments. We are also searching for *flp-11* receptors through our suppressor screens and by testing candidate genes. Identification of *flp-11* receptors will help us identify the sites of action of *flp-11* neuropeptides.

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