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## Characterization of *midline uncoordinated*, a mutation affecting behavior and neuroanatomy in *Drosophila*

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### Abstract

Genetic screens which assay behavior have been successfully used to identify genes required for neural function. This thesis is the analysis of *midline uncoordinated* (*muc*), a mutation identified for its effect on grooming behavior. This mutation was caused by a single P (*lac W*) insertion at position 28A. A number of additional *muc* alleles have been generated by excision of the P element. Using markers for two types of femoral chordotonal neurons we have been able to show that *muc* disrupts the axon trajectories of these cells. In addition to grooming behavior and neuroanatomy, many *muc* alleles also affect midline parting of the thoracic microchaetae, flightlessness, lethality and male sterility. Genetic analysis of the various *muc* mutations suggest that they form a unique complementation group. Three transcripts were found near the area of the *muc* mutation. The most likely gene affected by *muc* is the *Drosophila* homolog of dihydrolipoamide acetyltransferase, component E<sub>2</sub> of the mitochondrial pyruvate dehydrogenase complex. The P (*lac W*) element sits in an intron of this gene. We have found that the most severe grooming alleles retain all or almost of all of the P element used to cause the original mutation. In addition to severe grooming behavior, these alleles also have severe axon projection defects. Revertant alleles which have cleanly excised the P element have wild type grooming behavior and normal axon projection patterns. ^

### Subject Area

Molecular biology|Neurosciences|Genetics

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