Characterization of {\it midline uncoordinated\/}, a mutation affecting behavior and neuroanatomy in Drosophila

Jennifer Ellen Klenz, *University of Massachusetts Amherst*

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$\sb2$ 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

Recommended Citation

View More

DOWNLOADS

Since July 19, 2006

Share

COinS