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Screening for genes that control the wiring of the nervous system

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In 20 March [Current Biology](#), Kai Zinn and colleagues at the [California Institute of Technology](#), describe a genetic screen for identifying genes involved in axon guidance and synapse formation (*Curr Biol* 2001, **11**:417-430).

They started with a set of 2,293 *Drosophila* lines, each carrying an 'EP element' inserted at known sites throughout the genome. An EP element is a transposable *P* element containing a basal promoter and 14 copies of the yeast UAS sequence, which responds to the transcription factor GAL4. Each EP line was crossed to a fly line that expresses GAL4 and the green fluorescent protein (GFP) in all post-mitotic neurons. This generated F1 flies in which GAL4 drove high expression of the genes adjacent to the EP element, with GFP enabling visualisation of the neurons.

Kraut *et al.* report that 114 of the EP insertions led to mistakes in axon pathfinding and synapse formation. Analysis of the genomic regions around the EP elements suggested that the insertions were present in 76 genes. Published mutant phenotypes already exist for 41 of these genes; 35 were classified as 'new' genes. The proteins encoded include GTPase regulators, vesicle trafficking proteins, kinases and RNA-binding proteins.

References

1. Kraut R, Menon K, Zinn K: A gain-of-function screen for genes controlling motor axon guidance and synaptogenesis in *Drosophila*. *Curr Biol* 2001, 11:417-430., [<http://current-biology.com>]
2. Zinn Lab, California Institute of Technology, [<http://www.its.caltech.edu/~zinnlab/>]