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“Mutations in Synaptojanin Disrupt Synaptic Vesicle Recycling”

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Abstract: Synaptojanin is a polyphosphoinositide phosphatase that is found at synapses and binds to proteins implicated in endocytosis. For these reasons, it has been proposed that synaptojanin is involved in the recycling of synaptic vesicles. Here, we demonstrate that the *unc-26* gene encodes the *Caenorhabditis elegans* ortholog of synaptojanin. *unc-26* mutants exhibit defects in vesicle trafficking in several tissues, but most defects are found at synaptic termini. Specifically, we observed defects in the budding of synaptic vesicles from the plasma membrane, in the uncoating of vesicles after fission, in the recovery of vesicles from endosomes, and in the tethering of vesicles to the cytoskeleton. Thus, these results confirm studies of the mouse synaptojanin 1 mutants, which exhibit defects in the uncoating of synaptic vesicles (Cremona, O., G. Di Paolo, M.R. Wenk, A. Luthi, W.T. Kim, K. Takei, L. Daniell, Y. Nemoto, S.B. Shears, R.A. Flavell, D.A. McCormick, and P. De Camilli. 1999. *Cell*. 99:179–188), and further demonstrate that synaptojanin facilitates multiple steps of synaptic vesicle recycling.

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