

P028 *Drosophila* transcriptional adaptor Ada3 as a target for SUMOylation *in vivo*

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The *Drosophila* gene *diskette* (*dik/dAda3*) encodes a protein 29% identical to human ADA3, a subunit of GCN5-containing histone acetyltransferase complexes (HAT). The fly dAda3 is a major contributor to oogenesis, and it is also required for somatic cell viability. dAda3 mutants show severe phenotypes on polytene chromosomes, including histone acetylation and histone phosphorylation, defects in chromatin structure and decreased levels of polyteny. Here, we show *in vivo* evidence for posttranslational modification of dAda3 by Small Ubiquitin like Modifier (SUMO; *smt3*) conjugation following cleavage of the protein. Unlike ubiquitin, attachment of SUMO does not target proteins for degradation but changes the function of the modified protein, such as nuclear-cytosolic transport, transcriptional regulation, apoptosis, protein stability, response to stress, and progression through the cell cycle.

In case of dAda3 this modification seems to be crucial for nuclear import. Following nuclear import, SUMOylated dAda3 is required for a number of cellular processes including histone acetylation at specific residues, proper chromatin structure, etc. Current experiments aim to identify the SUMOylation site in dAda3 and the corresponding E3 enzyme.