

Fig. S1. Locomotion before and after decapitation. Average locomotion speed of animals before decapitation is 1.63 mm/s and 1 day after decapitation (dpc) is 1.37 mm/s, significantly decreased (** $P=0.0013$).

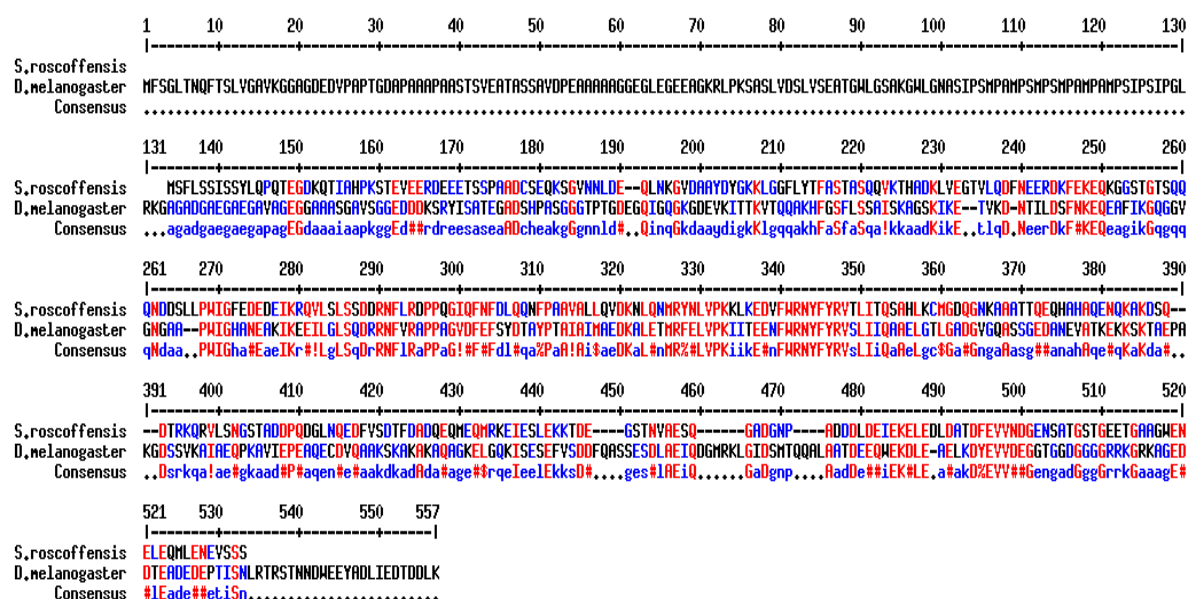


Fig. S2. Amino acid alignment of *D. melanogaster* Sap47 to *S. roscoffensis* best BLAST hit.

Sap47 corresponds to human SYAP1 (synapse associated protein 1). Identical and highly similar amino acids are colored in red. In the boxed region there is >50% similarity. Alignment done with <http://multalin.toulouse.inra.fr/multalin/>

Table S1. Percentage of vibration induced body contraction. Experiment I: all animals before and at 1 dpa or 5 dpa show a 100% response to vibration, these animals are identical with the ones tested for phototaxis and geotaxis. Experiment II: representing a control experiment to test if also smaller domains of the body are able to display vibration induced body contraction. All animals also show 100% response to vibration.

condition	%	N
Exp. I. animals before decapitation	100%	67
Exp. I. animals 1dpa	100%	37
Exp. I. animals 5 dpa	100%	31
Exp. II. posterior half animals 1 dpa	100%	20
Exp. II. anterior half animals 1 dpa	100%	20