

Trimeric complexes are involved to transcriptional regulation in *Drosophila melanogaster* development.

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Background: Homeoproteins are transcriptional factors (TFs) that shape animal body axes during development. These TFs are highly conserved and represent one of the most fascinating groups of regulatory molecules. Reports shown the multiplicity of interactions in hox proteins, as complexes trimeric involved to transcriptional activity. The study of trimeric complexes in Hox interactome will allow the better understanding of Hox genetic regulation during embryonic development. **Methodology:** Using a new combination BiFC-FRET approach performed in HEK293, the quantification was performed by FRETYY of ImageJ. Fly crosses were incubated at 25°C on standard yeast-agar-cornmeal medium. Embryo cuticle preparations were carried out according to (Gibson & Gehring 1998) and mounted on slides with Visicol. For adult imaging, the heads and antennae were dissected and directly transferred to microscopic slides without coverslips. The images were merged using the software HeliconFocus. **Results:** We found the presence of trimeric interactions of Antp-TBP-TFIIE β and Antp-TBP-Exd in cell culture. Further were confirmed these trimeric interactions using Antp mutants. Interestingly, the trimeric Antp-TBP-TFIIEB shown diminish of homeotic effect caused by Antp in larvae. To analyze the effect in antenna-leg transformation we drive the trimeric complex and found inhibition of antenna-leg in head of *D. melanogaster*. Antp-TBP-TFIIEB shown homeotic reduction of 77% in larvae and found inhibition of 100% of antenna-leg transformation. **Conclusions:** Our results show that these trimeric interactions are involved in the genetic control of *Drosophila melanogaster*.