



CDB SEMINAR

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<http://www.ksu.edu/tribolium/start.html>

Title: “ Ultrabithorax promotes membranous hindwing development by repressing elytra identity in the beetle *Tribolium castaneum* “

Date: Thursday, June 10
Time: 16:00 P.M. ~ 17:00 P.M.
Place: Auditorium of Building C, CDB

Summary

The two pairs of wings characteristic of ancestral pterygotes (winged insects) have often undergone evolutionary modification. In the fruitfly, *Drosophila melanogaster*, differences between the membranous forewings and the modified hindwings (halteres) depend on the Hox gene Ultrabithorax (Ubx).

The *Drosophila* forewings develop without Hox input, while Ubx represses genes important for wing development to promote haltere identity. However, the general significance of the idea that Hox input is important to the morphologically specialized wing derivatives and not the more ancestral wings bears examination in other insect orders. In beetles, like *Tribolium castaneum*, it is the forewings that are modified (elytra), while hindwings keep a more ancestral membranous identity. Our data show that in this beetle Ubx ‘de-specializes’ hindwings, which are transformed to elytra when the gene is knocked down.

We also show evidence that elytra result from a Hox-free state, despite their diverged morphology. It seems likely that a non-Hox gene(s) promotes elytra identity, in part by regulating the expression of homologs of spalt, iroquois, and achaete-scute. These results suggest a different mode of Ubx function for beetle fore/hindwing development.

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