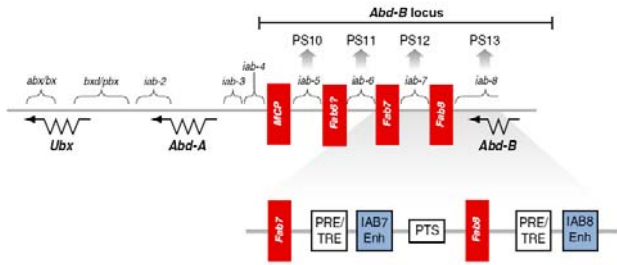


# Evolution of *Fab-7* insulator across different *Drosophila* species

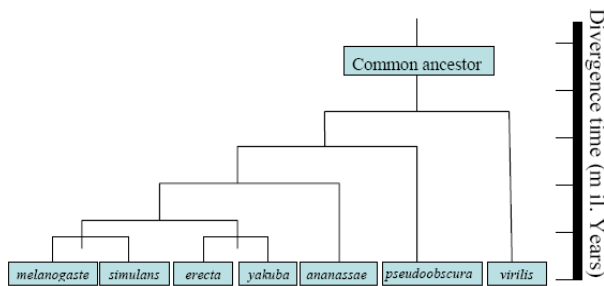
GINNA KIM AND ROBERT DREWELL

**Background.** The *Fab-7* insulator in the *Drosophila* genus sits between the *iab-6* and *iab-7* regions in the *Abd-B* gene of the bithorax complex (BaX-C) (Cléard et. al, 2006). This insulator prevents the enhancer from the *iab-7* region from activating the promoter in the *iab-6* region and vice versa. There are seven different *Drosophila* species used in this study: *D. melanogaster*, *D. simulans*, *D. erecta*, *D. yakuba*, *D. ananassae*, *D. pseudoobscura*, and *D. virilis*.

**Approach.** The *Fab-7* insulator sequences from each of the seven species will be isolated from genomic DNA and put into the W-PE-5-lacZ vector, which has two promoters. Those constructs will then be inserted into *D. melanogaster* flies. The embryos will be viewed during development to determine which promoters get turned on, indicating the functionality of the enhancer that sits between the two promoters.



(Valenzuela, Kamakaka 2006)

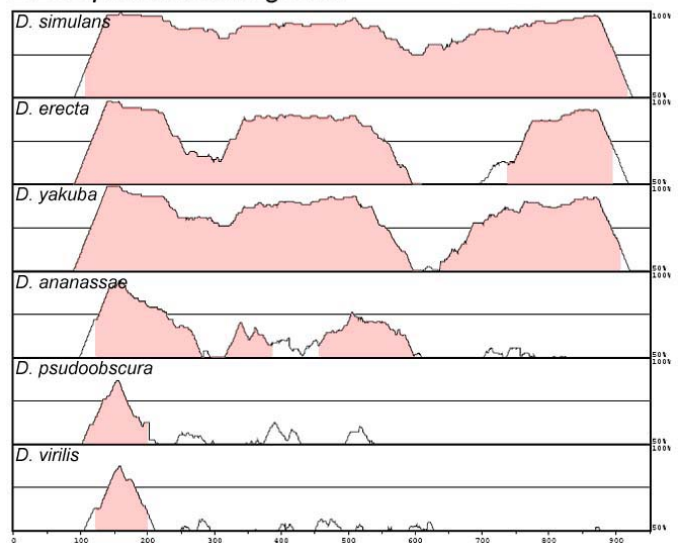


(Bae and Drewell, unpublished)

**Results.** Only *Fab-7* in pGEM-T constructs have been made for each species. The W-PE-F7-5-lacZ constructs have not been made.

**Discussion.** When the W-PE-F7-5-lacZ constructs from all seven species are injected into *D. mel*, the embryos will show the activity of the white gene and the lacZ gene. If sequence conservation is correlated to functional conservation, we expect that the *D. mel* embryos will show the expression of both the white and lacZ genes at the same time if the species of the inserted *Fab-7* insulator is distantly related to *D. mel* while only one gene will be expressed at a time if the species is closely related. However, the insulators for all seven species could function in *D. mel*, even though the sequences for the *Fab-7* vary. This could imply that in the genomic sequence for *Fab-7*, only the conserved regions, which are very small between *D. mel* and *D. vir*, are necessary in order for the insulator to function.

## *Drosophila melanogaster*



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