

F818Genetic analysis of Inversions in the duplicated *Amy* locus of
Drosophila melanogaster

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The *Amy* locus (*Amy*, 2-80; 54A1-B1) of *D.melanogaster* is duplicated (*Amy-p*, *Amy-d*). The members of duplicated genes are ~4 kb apart, consisting of 1482bp ORF without introns. They do not evolve independently but exhibit an evolutionary process called concerted evolution. To infer the concerted evolution, we analysed inversions of the *Amy* locus using PCR. In order to detect intergenic inversions, PCR primers were selected from highly divergent regions flanking *Amy-p* and *Amy-d*. The frequency of inversions in Suwon natural population was $(7.018 \pm 0.001) \times 10^{-3}$. For genetic analysis, 6 homozygous lines of inversion mutants were made by mating with Cy/Pm. Homozygous inversion mutants were analysed by PAGE and Southern blotting. For detailed molecular analysis of *Amy* region in homozygous inversion mutants, we have constructed genomic DNA library from one mutant line and isolated two genomic clones for the *Amy* gene. The cloned genes were sequenced by dideoxy chain termination method. From the detection of the inversions in the *Amy* locus, we obtained some evidences of interchromosomal recombination or gene conversion.

F819Studies on the Regulation of the Expression for *Ultrabithorax* Gene in
Drosophila melanogaster Using Microinjection.

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Homeotic genes are important for the regulation of the developmental processes. We have examined the regulation of the expression for *ultrabithorax* gene, which is a kind of homeotic genes of *Drosophila melanogaster* in the embryogenesis at anterior part of the embryo. We have already known through the transgenic *Drosophila melanogaster* that transcription factor GAGA, which binds to proximal promoter from -200bp to -31bp, cross-talks with upstream *cis*-regulatory elements. We will map the upstream regulatory elements of the *ultrabithorax* gene which cross-talk with GAGA transcription factor. To study this, we have made the plasmid constructs which bind to proximal promoter containing GAGA binding site, and various deletions in 22kb upstream sequence; pCpW β -Xkb - GAGA -ubx- LacZ- P-element plasmids (GAGA 1.2kb, GAGA 6.1kb, GAGA XhoI-XhoI religated). Microinjecting them into embryos of *Drosophila melanogaster*, we have analysed the anterior part of embryos with β -gal assay. The results were: GAGA 1.2kb and GAGA 6.1kb didn't show the suppression of the expression for *ultrabithorax* gene at the anterior part of the embryo, but GAGA XhoI-XhoI religated site did. Therefore we supposed that the regulatory site may be in the GAGA XhoI-XhoI religated site which lacks -19kb to -12kb of total 22kb upstream sequence.