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A NEW SYSTEM TO FOLLOW GENETIC RECOMBINATION BETWEEN TY ELEMENTS

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Recombination between artificially introduced repeated genes occurs readily in yeast in both mitotic and meiotic cells. The levels of this ectopic recombination were found to be similar to the allelic ones when different genes were assayed. Meiotic recombination between Ty elements, on the other hand, was found to be lower than expected, in a system using a Ty2 element marked with a URA3 gene (Kupiec and Petes, MCB 8:2942-2954, 1988).

We have developed a new system to follow recombination between Ty elements. We marked a Ty1 element by inserting a copy of the SUP4 (ochre) suppresor tRNA. The Ty1Sup was inserted at the LYS2 locus of a ade2-1(ochre) can1-100(ochre) strain, rendering it Ade^+ Can^s. Red (Ade^-) Can^r colonies can be selected for on plates containing canavanine. These colonies arise in 50% of the cases as a consequence of recombination between the two LTRs that flank the Ty1Sup and in 50% by gene conversion between Ty1Sup and unmarked Tys (only rarely the SUP4 marker mutates or is converted by the chromosomal copy)

An isogenic diploid strain was constructed and meiotic levels of recombination were scored by random spore analysis. As in the previous studies, the meiotic levels of recombination ($4.9 \pm 2.0 \times 10^{-5}$) were only one order of magnitude higher than the mitotic levels ($0.34 \pm 0.07 \times 10^{-5}$).

We intend to use this system as a tool to investigate recombination between Tys, and to look for mutants affected in this type of recombination.

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