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Recombination at the bar locus in *Drosophila melanogaster* was studied in a reverse attached-X stock synthesized by Dr. E. Novitski. The males of this stock were of the constitution $XY^S \cdot Y^L$. The females of the stock carried a compound reversed metacentric X

chromosome. They were homozygous for *y* and *B*, and heterozygous for *v*, *f* and *os*⁰. The X chromosomes were attached at the "yellow" end rather than at the usual centromere end. This arrangement facilitates a higher frequency of homozygosis for the bar region and thus permits analysis of the marker constitution of exceptional females, that is, females which are double-bar or half-bar in phenotype. The likelihood of recovery of sister chromatids involved in exceptional events is increased as well, a prerequisite to the study of the reciprocity of intrachromosomal events.-----Exceptional females were analyzed to determine the bar genotype and the combination of marker genes carried by each of their X chromosomes. The results were interpreted in regard to exchange between obliquely synapsed members of the duplication, which is associated with exchange of outside markers and is presumed to be reciprocal. Results were also interpreted in regard to the hypothesis of intrachromosomal exchange (Laughnan, 1961) in which the markers are expected to be nonrecombinant and which proposes a reciprocal sister chromatid event.-----A total of 59,836 females, and therefore 119,672 X chromosomes, were examined for changes at the bar locus. A total of 193 recombinant exceptions was observed. Fifty-seven of these carried bar changes in both X chromosomes and were B^+/BB in genotype with the exchange of outside markers which is predicted on the basis of reciprocal products of crossing over between obliquely synapsed members of the bar duplication. The reciprocity of the exchange between obliquely synapsed duplication members was thus demonstrated. One hundred of the recombinant exceptions were of the genotype B^+/B and thirty-six were BB/B . The three classes of recombinant exceptions are expected to be equal in frequency and the discrepancy is ascribed to the reduced viability of the BB females.-----Eleven females carrying nonrecombinant exceptional strands were observed. Eight of these were half-bar in phenotype, one had round eyes and two were double-bar in phenotype. One of the BB nonrecombinant strands was recovered along with its sister strand and offered an opportunity to test the prediction that intrachromosomal exchanges between sister strands produce BB and B^+ strands as reciprocal types. Analysis showed this exceptional female to carry bar on one strand and double-bar on the other. While females of this type are not expected on the hypothesis of intrachromosomal exchange, the number of BB nonrecombinant females is insufficient to refute the hypothesis. More cases in which the nonrecombinant BB exceptional strand is recovered along with its sister are needed before any final conclusions concerning the model can be drawn.-----Four females carrying aberrations associated with bar changes were also observed. Three of these carried deletions and the fourth is still in the process of analysis.-----All 193 recombinant-exceptional females obtained from these studies exhibited normal genetic behavior in that all exceptional strands were homozygous viable. The frequency of these recombinant bar changes was one per 480 X chromosomes. The eleven females carrying nonrecombinant exceptional strands were analyzed cytologically as well as genetically and the frequency of nonaberrant changes was one per 10,000 X chromosomes. The frequency of X chromosomes carrying bar changes associated with aberrations was one per 24,000 X chromosomes.

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Reference: Laughnan, J.R., 1961, Mutation and Plant Breeding, NAS-NRC 891: 3-29.

Würgler, F.E. Swiss Federal Institute of Technology, Zürich, Switzerland. Synthetic female sterile factors in two combinations of X-chromosomes with *dp bw*; *st p^D* autosomes in *D. melanogaster*.

During the last few years we tried to construct some new multipurpose stocks with marked sex-chromosomes and the autosomal markers *dp bw*; *st p^D*. The autosomes were always derived from the Inscy; *dp bw*; *st p^D* stock obtained from I.I. Oster, Bowling Green, Ohio, USA (stock number j

419 in the 1971 stock list). In a first set of experiments (U. PETERMANN, Mutation Res. 5, 397-410, 1968) we tried to replace the Inscy chromosome by a crossover product with the markers *y sc^{S1} B f In-49 v w^a sc^B* (=X^x) obtained from females heterozygous for the following