

(Duncan and Kaufman). This deficiency extends from 84D9-12 to 84F16, and exposes the intersexual phenotype when heterozygous with the recessive *dsx*. The results of this screen are summarized in the following table.

# Chromosomes Tested	# Sterile	# Viable	# Lethal	% Lethality
2815	406	2345	64	2.3

Among the viable chromosomes, 4 recessive mutations exhibiting an intersexual phenotype were recovered. These

have been crossed to *dsx*. Their failure to complement with *dsx* demonstrates that these mutants are indeed new alleles of this locus. Further detailed analysis of the morphological characteristics of these new alleles is in progress.

It is hoped that mapping of the recovered lethals will make possible the construction of a fine structure map of the *dsx* region. By utilizing 3 overlapping deficiencies recovered in Duncan and Kaufman's study, the positions of the lethals in 3 segments of region 84E-F is currently being ascertained. Inter se crosses following the deficiency mapping should yield a picture of the genetic structure of the region to which *dsx* has been localized, an area of the chromosome comprising about 15 bands.

References: Duncan, I. and T.C. Kaufman 1975, *Genetics* 80:733; Lewis, E.B. and F. Bacher 1968, *DIS* 43:193.

Hazra, S.K., J. Banerjee and S.K. Sen.
Bose Institute, Calcutta, India. Location and nature of white-ivory (w^i) in the white locus of *D. melanogaster*.

It was earlier reported (Hazra et al. 1978) that white-ivory (w^i) does not affect recombination in the region further away from its location in the white locus of *D. melanogaster*. The present investigation was designed for a critical analysis of this feature in its vicinity as well as

to locate the mutant more precisely in the white locus. The relevant w^i mutant was obtained from Pasadena Stock Center, USA. Other white locus mutants employed here are white-apricot (w^a), white-cherry (w^{ch}), white-eosin (w^e), white-coral (w^{co}), white-honey (w^h) and pure white (w). Yellow body color (y), split bristle (spl) and echinus eyes (ec) served as flanking markers. Attached-X females of the genotypes $y w^a spl/w^{iec}$; $y w^{co} spl/w^{iec}$; $y w^{ch} spl/w^{iec}$; $y w^e spl/w^{iec}$ and $y w^h spl/w^{iec}$ were constructed according to Lindsley and Sandler (1963) and mated individually to $y w spl ec$ males. All heterozygous females carried $SML/+$ and $Ubx^{130}/+$ rearrangements in the 2nd and 3rd chromosomes respectively to increase crossing over in the distal portion of the X chromosome (Judd 1959). The couple mutants were confirmed by their ability to yield respective single mutants due to reversion of w^i to w^+ . The association of w^i with w^a in the coupling phase is indistinguishable from w^a phenotypically. Accordingly, this putative couple mutant was confirmed by the recovery of w^i as results of crossing over in between w^a and w^i mutant sites. Out of 27140, 28500, 112860, 292000 and 552400 flies screened respectively from the crosses as mentioned above in the serial order, 6, 6, 4, 4 and 4 recombinants were recovered. Recovery of $y w^a w^{iec}$ and $y w^{co} w^{iec}$ flies as recombinants guaranteed that w^i is located to the right of w^a and w^{co} . Emergence of $w^i w^{ch} spl$ flies from the third cross confirmed the earlier indication made by Lewis (1959) that w^i is located to the left of w^{ch} . Since the mutants w^e and w^h were shown to share a common location with w^{ch} by earlier workers, it was anticipated that they would yield similar results as that of w^{ch} . On the contrary, the emergence of $y w^e w^{iec}$ and $y w^h w^{iec}$ flies as recombinants from fourth and fifth cross respectively refuted such a working hypothesis. The location of w^i to the right of w^e and w^h led us to think that a subsite of white locus could further be split through recombination. This suspicion was found to be along the right lines as evident from the results obtained from the subsequent experiment.

This experiment was expected to serve a dual purpose. First, the relative location of w^i and w could be determined; and second, the indication obtained from previous tests that the mutants of a subsite have distinct spatial locations could be checked with respect to w and w^{ch} . Free-X females of the genotype $w^i w^{ch} spl/ y w ec$; $SML/+$; $Ubx^{130}/+$ were constructed and mated to $y w spl ec$ males. In a total of 426000 flies screened, 6 $y w^{ch} spl$ exceptionals were obtained as the result of crossing over in the genetic interval marked by w^i and w^{ch} . A most interesting observation was the emergence of two $y spl$ males through reciprocal recombination in the genetic interval marked by w^{ch} and w . The complementary crossover, $w^i w^{ch} w$, could not

be recognized. Nevertheless, it was realized that w^{ch} is located to the left of w , which in turn signifies that w^i is located to the left of w .

In the present crossing over tests with w^i and other mutants of a subsite, the frequencies of recombinational derivatives were comparatively low in general when compared to that of the mutants of two different subsites. This may be explained most plausibly due to close sharing of location of w^i with the employed mutants, rather than that w^i inactivates recombination in this genetic interval. This supplements our earlier findings (Hazra et al. 1978) that w^i is a point mutation rather than a duplication as hypothesized by Bowman (1965).

References: Bowman, J.T. Jr. 1965, *Genetics* 52:1069; Hazra, S.K., J. Banerjee and S.K. Sen 1978, *Heredity* 40:299; Judd, B.H. 1959, *Genetics* 44:34; Lewis, E.B. 1959, *Genetics* 44:522; Lindsley, D.L. and L. Sandler 1963, in: *Methodology in Basic Genetics*, p. 390.

Hedrick, P.W. and E. Murray. University of Kansas, Lawrence, Kansas. Competition between *D. melanogaster* and *D. simulans* from natural populations.

Lawrence, Kansas, *melanogaster* was the most common of the two species in both 1977 and 1978 (Table 1). At all sampling times, the proportion of *melanogaster* was around 90% and the overall proportion is exactly 90.0%.

Table 1. The number of *melanogaster* and *simulans* males trapped in Lawrence, Kansas.

Date	mel	sim	% mel
7/77	292	25	92.1
9/77	218	35	86.2
7/78	50	1	98.0
9/78	86	11	88.7
Total	646	72	90.0

D. melanogaster and *D. simulans* are sympatric over much of their distributions and they appear to have similar ecological niches. Generally, *melanogaster* is the more common species where they coexist although there are some exceptions. In samples captured in a single location in

The proportions of two species observed in nature may be a reflection of a number of factors, such as predation, interspecific competition, sampling techniques, habitat selection, etc. Therefore, an interspecific competition experiment was set up to examine whether the results of interspecific competition in the laboratory were consistent with the field data. As a result only males could be scored, since females of the two species are very difficult to distinguish. At least 50 males were scored for each replicate every generation except in a few generations where there were slightly less than 50 males in a replicate.

The two lines of *melanogaster*, mel 1 and mel 2, were randomly selected isofemale lines caught at the Lawrence location and had been in culture for approximately six months. One *simulans* line, sim 1, was initiated from approximately 10 females caught in a Kansas City, Kansas park about 35 miles from Lawrence and had been in culture for approximately 30 months. The other *simulans* line, sim 2, was an isofemale line that was caught at the Lawrence location and had been in culture for approximately 18 months.

Since *melanogaster* was in higher proportion in local natural populations and generally outcompetes *simulans* in laboratory tests, the experiments were initiated with 6 pairs of *melanogaster* and 24 pairs of *simulans*, giving an initial frequency of 20% *melanogaster*. Four replicates of each of the four combinations of the *melanogaster* and *simulans* lines were set up. Generations were discrete and kept at 14-day intervals with the adults allowed to lay eggs for four days. Other details are as in Hedrick (1973).

The results of competition for sim 1-mel 1 and sim 1-mel 2 are given in Figures 1A and 1B, respectively. In only one replicate did *simulans* outcompete *melanogaster* and become fixed, replicate (b) of the sim 1-mel 1 competition. In all other replicates, *melanogaster* eventually became 100% of the culture. There is variation between replicates, however, with replicates (a) and (d) of the mel 1-sim 2 competition containing a few *simulans* even after 12 generations. When sim 2 was competing with mel 1 and mel 2, *simulans* was eliminated within five generations in five of the replicates. In the other three replicates, no *melanogaster* were ever scored. It appears that for some unexplained reason, the initial six females in these replicates did not produce any progeny.

One can measure the relative competitive ability of these two species for the different replicates by finding the "best" numerical fit of the change in proportions over time. Since *melanogaster* was the winner in all but one replicate, the relative competitive ability of