

As far as the inversions found in the populations are concerned not one included the mutations studied although some are on the same chromosome. Only the cardinal mutation was just at the beginning of the inversion (3R)P, which could cause a linkage disequilibrium. Nevertheless the small inversion frequencies in these populations make this impossible in practice.

It can therefore be concluded, in general, that the strong heterosis present in these artificial populations cannot be explained by the maintenance of inversions in heterozygosis.

References: Bridges, C.B. 1935, *J. Heredity* 26:60-64; Chigusa, S.I., L.E. Mettler & T. Mukai 1969, *Genetics* 61:10; Lindsley, D.L. & E.H. Grell 1968, *Carn. Inst. Wash. Publ.* 627; McKenzie, J.A. & P.A. Parsons 1972, *Oecologia* 10:373-388; McKenzie, J.A. & P.A. Parsons 1974, *Genetics* 77:385-394; Mukai, T., L.E. Mettler & S.I. Chigusa 1971, *P.N.A.S.* 68:1065-1069.

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Eugene USNA. Search for a tetraploid  
male.

The obvious usefulness of a tetraploid line in *melanogaster* has led a number of us to try to put together a tetraploid male. The existence of the entire compounds for both autosomes has made this project more hopeful.

In addition, we have a compound X stock with a completely functional Y chromosome at the centromere region, this point being indisputable since the compound is a tandem metacentric which generates simple rings fertile in the male without a free Y chromosome.

A triploid line was constructed with the compound X and Basc, C(1)TM, XYS.YLX,y/Basc. Such females were mated to males with two second chromosomes attached together, C(2)EN, as well as two thirds joined together, C(3)EN. It would be anticipated that some of the gametes from the female would be diploid and would carry also the Y in the compound X, and that some of the gametes of the male would have two sets of the large autosomes, and a Y chromosome. The resulting zygote from the combination of the two would be 2X2Y;4A. The small fourth chromosomes were uncontrolled, except that the triploid stock was fresh and probably carried three fourth chromosomes, in some individuals at least.

366 triploid females of the above constitution were mated to an excess of C2;C3 males. The diploid progeny included females: 148 B/+, 38 y; males: 76 w<sup>a</sup> B, 51 + and 6 y (the latter coming from crossing over within the TM). There were 27 B/+ and 6 y intersexes, 31 B/+ triploids and 40 non-B triploids. A few unusual products of crossing over or non-disjunction appeared: 2 w<sup>a</sup> B females and 2 B males.

Of particular interest of course were the possible tetraploids. These included 4 y males and 3 B males with the large wing cell size characteristic of polyploids. There also appeared one female with a highly suppressed B phenotype and unusually large wing cells which might have been 4A in autosomal composition. All these individuals proved to be sterile, and it appears likely that the males were in fact male-like intersexes (a not too common occurrence) and that the female was 3X;4A.

From these results it would appear that if such higher level polyploids are viable and fertile in *melanogaster*, they are not easily produced by way of these entire compounds, although it can be surmised from the types of progeny described above that the 3N females and the C(2);C(3) males both produce the required diploid gametes.

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Mating behavior in *D. auraria* complex.

We attempted to clarify what consists of components in mating behavior and how it genetically relates to species discrimination among the four siblings of *D. auraria* complex. A serial studies by means of observation for

successive mating behavior were conducted by using a videocorder with a small observation chamber (φ15mm) under a light condition (1500 lux). The principal results obtained are as follows:

1. It was preliminarily found that there were a little but critical differences in sexual maturation between the four species. *D. triauraria* matured somewhat faster, conversely, *D. biauraria* did slower than the others. The male flies of the four species, in any case, all matured sexually by 4 days after eclosion at room temperature of 25°C. We accordingly conducted thereafter the video-observation by using flies of both sexes of 4-days through 6-days old.