

Hiraizumi, Y. and D. L. Hartl. The University of Wisconsin, Madison, Wisconsin. Evidence for normal chromosome disjunction in segregation distorter males.

The sex-ratio effect of segregation distorter (SD) (Hiraizumi and Nakazima, Genetics, 55:681-697, 1967) can be formally explained by the disjoining of the SD from the X chromosome in heterozygous males. Such disjunction could result from

an "affinity" of SD for X, caused, say, by a small region of homeologous association. It could also result from a large scale nonspecific pairing of SD with X to an extent to exclude both the non-SD and the Y chromosome from the association. The latter possibility would show itself in an increased frequency of second and sex chromosomal non-disjunction in SD males.

The frequency of nullo-II and diplo-II sperms was assessed by mating sets of 15 males (experimental: SD(NH-2)/cn bw, controls: cn/cn bw and Tokyo/cn bw) with 15 attached-II females (dp/dp; cn bw/cn bw) in vials, transferring to fresh medium every 4 days for 16 days, and placing 3-4 pairs of Cy/Pm in the vacated vials to maintain favorable culture conditions. The exceptional progeny are of 3 types: SD or control/cn bw (diplo-II sperm), dp/dp; cn bw/cn bw (nullo-II sperm), SD or control or cn bw/dp cn bw (which arise from detachments of the attached-II, presumably by crossing over). Since the frequency of exceptional types was approximately the same between SD and controls, no progeny tests were performed to determine which were detachment progeny. The frequencies were: SD gave 6 exceptional progeny from 1005 males, or .60%; cn and Tokyo (pooled) gave 6 exceptions from 450 males, 1.3%. One experimental vial gave 10 wild type females and 3 wild type males. This was attributed to pre-meiotic detachment in some female and was therefore not included in the analysis.

A test for the production of XXY females used the fact that an extra Y suppresses the Pm phenotype. R(cn)-14/Tokyo and cn/Tokyo males were brooded at 4 day intervals with Cy bw/Pm females (3 pairs per vial) and the non-Cy progeny were scored for the Pm phenotype. Several parental females were evidently XXY Cy bw/Pm, for they gave a high frequency of secondary exceptions. These were excluded from the following summary: SD gave 6 XXY females out of 15,515 non-Cy progeny, .04%; cn males gave 9/13,954=.06%.

A very small experiment testing for the production of XO males used  $y^{w^a}/Y \cdot w^+$ ; SD(NH-2) or Tokyo/+ males mated with  $y^{w^a}/y^{w^a}$  females. The frequency of exceptions was: SD, 1/243=.41%; Tokyo, 1/221=.45%.

We conclude that there is no significant increase of second or sex chromosomal non-disjunction from SD males and, therefore, that models for the mechanism of SD or for the sex-ratio effect which imply a gross increase in second or sex chromosomal non-disjunction are untenable. While this excludes wholesale X-II pairing, it does not rule out short segment interactions as a workable hypothesis for the sex-ratio effect. (Supported by NIH Grant GM-07666 and NASA Training Grant NsG(T)-23).

Hijikuro, S. Osaka University, Osaka, Japan. On the binding state of beta-alanine in the pupal sheaths of *D. melanogaster*.

It has been reported that the binding state of beta-alanine in the pupal sheaths of insects differs from that of other amino acids (Fukushi, Japan. J. Genet. 42, 1967). In the present study, to determine the free amino groups in the

pupal sheaths, the pupal sheaths of Oregon-R and ebony<sup>11</sup> strains of *D. melanogaster* were reacted with fluorodinitrobenzene by Sanger's procedure. DNP-amino acids in the acid hydrolysate of dinitrophenylated pupal sheaths were, then, extracted with ether and analyzed with IRC-50 column chromatography (Seki, J. Biochem. 47, 1960). In results, beta-alanine in the pupal sheaths of the wild strain was recovered as DNP-derivatives, although no other DNP-amino acids were detected by this method. On the other hand, no DNP-amino acids were detected from the dinitrophenylated pupal sheaths of ebony<sup>11</sup> strain. The yield of finally recovered DNP-beta-alanine suggested that all amino groups of beta-alanine in the pupal sheaths were in free form. Similar results were obtained with the wild and black pupal strains of *Musca domestica* and *Bombyx mori*.