The sexual isolation is not purely a matter of sexual activity; the choice of a partner is of course of primary importance. A first survey, using the coefficients proposed by Petit and Ehrman (Bulletin biologique CII:433, 1968), shows that the "isolation coefficient" between "ebony" and wild is in general higher (approximately 2.0) than the "isolation coefficient" for "white" in competition with wild (roughly 1.0). The "male selection coefficient" is always highly in favour of the wild flies; from its variations it should be difficult to draw general conclusions (concerning e.g. a possible "advantage" for the "rare" males). But, from the variations of the "female selection coefficient" it seems very probable that the "ebony" females (but not the "white" ones) are "advantaged" when they are rarer, being preferred by the numerous wild males. Again, such a characteristic seems to be independent of the physical conditions.

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Differential response of polytene X-chromosome of male D. melanogaster to dietary glutamic acid.

Earlier studies by Anders and Anders (1964) and Fahrig et al. (1967) have shown that feeding glutamic acid to developing D. melanogaster prolongs the larval life and the polytene chromosomes of these larvae appear larger. In an attempt to use this method to obtain polytene nuclei in other larval organs (e.g. Malpighian tubules, midgut, etc.) of D. melanogaster suitable for microscopic studies, an interesting effect of dietary glutamic acid was observed on the organization of the male X in salivary glands.

Glutamic acid was mixed with normal Drosophila food (1.5 g/100 g of food). Freshly hatched larvae were transferred and allowed to develop in glutamic acid supplemented food either at 24°C or at 12°-15°C. Salivary gland chromosomes were examined from late third instar larvae (approx. 105-110 hr after hatching at 24°C and 28-30 days after hatching at 12°-15°C). 3L/X chromosome width ratios were considered for comparing the relative width of the X in normal and glutamic acid-fed larvae (for details, see Mukherjee et al., 1968).

Table 1. Effect of dietary glutamic acid on the width of the male X-chromosome in D. melanogaster

	No. of nuclei	Mean 3L/X width ratio ± S.E.
Control male	60	1.10 ± 0.01
GLU male 24°C	31	1.29 ± 0.02*
GLU male 12°-15°C	20	1.04 ± 0.04*
Control female	59	1.00 ± 0.02
GLU female 24°C	30	0.98 ± 0.01

* Ratios significantly different from control male (P 0.01).

At both the developmental temperatures, the chromosomes are wider, condensed in length and better stained than in normal larvae, more so at the lower temperatures. At 24°C, the male X appears narrower than the paired autosomes, unlike the situation in normal male nuclei. At 12°-15°C, the male X shows a reverse effect: the X in male appears much swollen with the banding pattern largely obscured, while the autosomes show clear banding pattern, though much condensed in length. Female nuclei, which too have highly condensed chromosomes, do not show the appearance which male X often displays. The summarized data in Table 1 show the differential effect of dietary glutamic acid on the width of the male X at different developmental temperatures.

Significance of this behaviour of the male X is being analyzed and preliminary observations suggest that with the altered morphology of the X, there are also some changes in the replicative and presumably in the transcriptive activities of the same. It appears that this differential response of the male X is related to the normal hyperactivity of the male X in Drosophila to achieve dosage compensation (Lakhotia and Mukherjee, 1970). It may be noted that under certain other conditions too, as in ltl larvae, the male X assumes a very diffuse and ball-like appearance (Kobel and van Breugel, 1967).

References: Anders, F. and A. Anders 1964 DIS 39:87; Fahrig, R., M. Sieger and F. Anders 1967 Verh. Dtsch. Zool. Ges. in Heidelberg 565-578; Kobel, H.R. and F.M.S. van Breugel 1967 Genetica 38:305-327; Lakhotia, S.C. and A.S. Mukherjee 1970 J. Cell Biol. 47:18-33; Mukherjee, A.S., S.C. Lakhotia and S.N. Chatterjee 1968 The Nucleus, Suppl. 161-173.