

Majumdar, D. and A.S. Mukherjee. University of Calcutta, India. Morphogenetic expression of a reversible Bar-inversion of *D. melanogaster*.

An analysis of morphogenetic expression of polytene chromosomes in $In(1)^{B^M2}$ (*rv fB¹⁵* reinversion; mosaic) of *D. melanogaster* is presented here. The inverted region includes the segment 16A 2-5 to 20E of the X chromosome. In homozygous or hemizygous conditions the inversion appears

as a small ring at the base of the X chromosome (Fig. 1a) by pairing of the shifted heterochromatic portion (20A-E) with the chromocenter. In females all three possible configurations (homozygous inversion, homozygous reinversion and heterozygous inversion) have been observed. The last one has been observed in only a few nuclei. In males, specifically, the

post-reinversion conditions are associated with an interesting morphogenetic behavior of the X chromosome in different nuclei. Firstly, the inversion-bearing chromosome appears similar to wild type male X chromosome; secondly, the reinverted chromosome extraordinarily puffs out at one or more sites, namely 1B-2B,

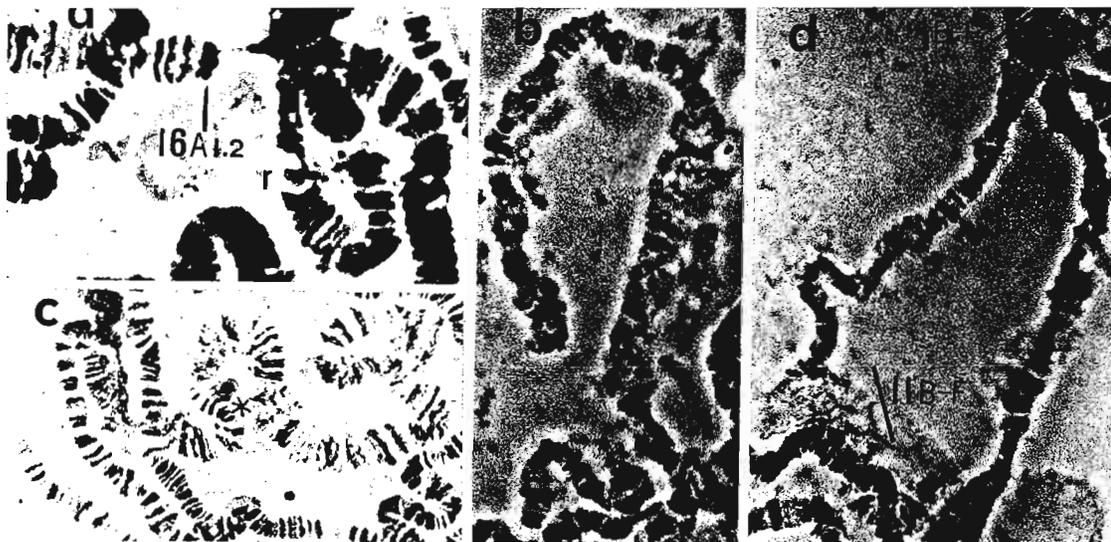


Fig. 1. (a) Homozygous inversion in female showing the ring (r) attached to chromocenter and the distal breakpoint: 16A 1.2 (pointer). (b) RF chromosome decondensed at the proximal half. (c) RF chromosome highly decondensed all through except at the region 17 A-F (*). (d) RN chromosome excessively and specifically puffed out at 1 B-F and 11 B-F.

10EF and 11B-F, and is significantly less wide than the paired autosomes or wild type male X chromosome (RN); and lastly, some reinverted chromosomes are extraordinarily decondensed at the proximal or distal half or through the whole of the X chromosome (Fig. 1b). Such decondensed chromosome or chromosomal segments are wide, stumpy and much less stained than the normal male-X; sometimes the whole chromosome appears fuzzy (RF) and no thick band is discernible. Other notable properties of reinverted chromosomes are (1) the usual male-X type condensed banding of the region 17 A-F in RF chromosomes (Fig. 1c) despite excess decondensation (2-4 times the width of any pair of autosomes) at other regions; (2) characteristic puffing of 11B-F, in all RN chromosomes, ranging between 2-6 times its activity in wild type males (Fig. 1d); (3) at 24°C the frequency of RN chromosomes is very high (90-95%) and that of RF chromosomes varies between 0 and 10%. At 18°C the frequencies of occurrence of RN, RF and inversion-bearing chromosomes are 42%, 26%, and 32% respectively.

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