

Meyer, Helen U. University of Wisconsin, Madison, Wisconsin. An iso-allele of the dumpy lethal.

lethal in combination with  $dp^{lv I}$  Cy, Ins CyO pr  $cn^2$  sp ( $dp^{lv I}$  = dumpy-Thoraxate of Ives). This suggested that we were dealing with an allele of some lethal present in this Curly chromosome, most likely with a lethal allele in the dumpy region. But contrary to expectation it was then found that homozygotes  $+_n/+_n$  were viable and of wild type appearance. A homozygous stock could be established which, however, showed higher egg mortality than a typical wild type stock.

The tests with  $dp^{lv I}$  were repeated with the same result, and crosses made to other mutant alleles of the dumpy region. The following results were obtained:

<u>Lethal combinations:</u>	<u>Viable combinations and wild type heterozygotes</u>
$+_n/dp^{lv I}$ (dumpy-Thoraxate)	$+_n/dp^{lv}$ (dumpy-thoraxate)
$+_n/dp^{olv}$ (dumpy-Truncate)	$+_n/dp^{cm2}$ (dumpy-comma)
$+_n/dp^{IM}$ (dumpy-lethal)	$+_n/dp^{ov}$ (dumpy)

Non-lethality (complementation) with thoraxate was unexpected. Localization of the factor responsible for lethality in combination with  $dp^{IM}$  was carried out by crossing females  $+_n/S$  Sp Bl  $L^{rm}$   $bw^D$  to males  $dp^{IM/S^2}$  Cy, Ins(CyL+R)... Classification of the non-curly offspring for the dominant markers S, Sp Bl,  $L^{rm}$ ,  $bw^D$  placed the factor between S and Sp and indeed showed that it was located in the dumpy region.

This mutation can be interpreted as an iso-allele at the dumpy-lethal sublocus, or at one of them, if there should be more than one such sublocus. It must be considered a hypomorph, since it produces some, but less than the normal amount of a gene-initiated product necessary for survival. Two doses of it, as in homozygotes, are sufficient; one dose is not sufficient in combination with other (amorphic) dumpy-lethals. An exception is the case of  $dp^{lv}$ , which likewise must be a hypomorph and apparently is a less drastic mutation than  $dp^{lv I}$ .

This dumpy-lethal isoallele might be useful in attempts to discriminate between the potentialities of various dumpy-lethal mutations, in a similar way as  $dp^{cm2}$  is useful. It also might be a tool in some biochemical investigations of that region. On the basis of this tentative interpretation the symbol  $dp^{IMi}$  (dumpy-lethal iso-allele) is suggested for this mutation.

Williamson, J.H. University of California Riverside, California. Simultaneous recovery of two detachment-X chromosomes from an irradiated female.

The model of directed disjunction predicts that subsequent to an induced interchange in immature oocytes the affected centromeres will segregate during anaphase I (Parker, 1969). Consistent with this prediction is the observation that induced detachments of a com-

compound X chromosome are recovered singly. An exception to this rule was recently recovered from a  $C(1)RM, y v bb/O; y^+ \cdot spa^{pol}/ci ey^R$  female treated with 2000 r of X rays, mated to  $y^a Y^L \cdot Y^S/Y; spa^{pol}$  males and brooded daily. The exceptional female was  $v$  and at first assumed to be triplo-4 or (more likely) to carry a recombinant  $y^+ \cdot ci ey^R$  fourth chromosome. All exceptional progeny were being tested to determine their chromosomal complements and this female was found to carry two detachment-X chromosomes. One was  $y v bb \cdot y^+$ , the other was  $y v bb \cdot ci ey^R$ . In addition she carried a paternal fourth marked with  $spa^{pol}$  and a Y chromosome. The recovery of these two detachments required at least three induced breaks and cyclical interchange. At anaphase I the centromeres from the compound-X and the  $y^+$ -marked fourth segregated from the other fourth centromere. At anaphase II non-randomness would prefer the detachment capped with  $ci ey^R$  but not the captured detachment marked with  $y^+$ . However, both were incorporated into the oocyte, with no free maternal fourth chromosome. This exception, along with those described in DIS 43: 178, adequately demonstrate that multiple break rearrangements can be recovered and recognized only if one thoroughly analyzes all exceptional progeny.

Reference: Parker, D.R., 1969, Mutation Res. 7: 393-407.