Wargent, J.M. University of Sheffield, Sheffield, England. Position-effect variegation in wings of D. melanogaster.

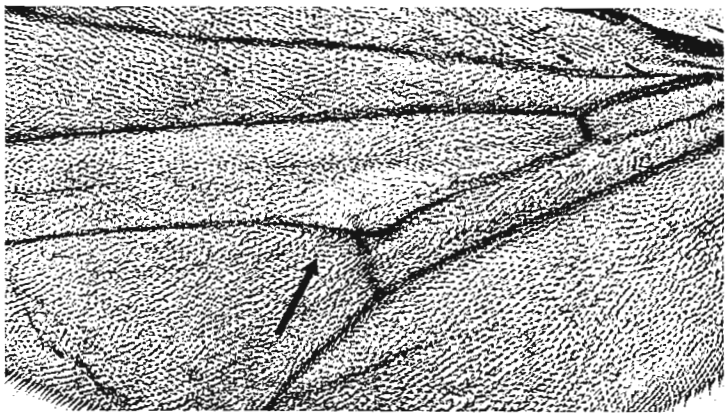
The wings of the mutant miniature of Krivshenko[1] (m^K) at normal temperatures (25°C) are sometimes crumpled and may vary in size from fully wild type to fully 'miniature'. The 'miniature' wings show the distinctive morphology of the miniature (m) mutant.

Reciprocal crosses, m^K/m^K x m/Y and m/m x m^K/Y were set up, and the F_1 bred at 14°C. Microscopic examination of the wings of the female heterozygote, m^K/m, showed that they contain patches in which the hairs appeared closer together than in surrounding areas. Measurements were made of the distances between hairs in patches (p) and also in surrounding areas (s). For comparative purposes measurements were also made of the inter-hair distances in the Amherst wild type and in a homozygous m strain, both bred at 14°C. The results are shown in the table below.

Strain	Number of Measurements	Mean inter-hair distances ± standard error
m^K/m (p)	50	62.19 ± 0.93
m^K/m (s)	50	88.55 ± 0.98
+/+	50	92.08 ± 1.51
m/m	50	53.40 ± 0.90

Statistical comparison of the difference between means shows that the wild type and the m mutant are significantly different at the 1% level. The difference between m^K/m (s) and +/+ is not significant and although a significant difference was obtained between m^K/m (p) and m/m the inter-hair distances of the former resemble those of the m strain rather than those of the wild type. The difference between the means for m^K/m (s) and m^K/m (p) is significant at the 1% level. These results indicate that the wings contain both wild type and m-like cells.

There is considerable variation in the size of the patches observed; some wings contain predominantly wild type cells while others consist mainly of m-like cells. The photograph shows a predominantly 'miniature' wing with an area of wild type cells. It is assumed that the crumpled phenotype is caused by the presence of patches, and that the number and size of the patches determine the size of the wing.



The strain contains an inversion with breakpoints in section 10E4-5 and section 20B of the salivary X chromosome. The m locus, in section 10E1-2, is relocated next to broken heterochromatin in the rearranged chromosome. The presence of mutant cells in the wing is therefore probably due to a variegation-type position effect[2] at the m locus; this conclusion is supported by the observation that the mottling is enhanced by low temperature.

References: 1. Krivshenko, J., 1956, DIS 30: 75; 2. Lewis, E.B., 1950, Advances in Genetics 3: 73-115. This work was supported by Grant No. 68/1317 from the Science Research Council of Great Britain.

Novitski, E., E. Ehrlich and H. Becker*. University of Oregon, Eugene, Oregon and University of Munich, Germany*. A terminal attachment region on 2L.

Compounds involving the X and Y chromosomes or several X-chromosomes have been put together in virtually every combination, but compounds involving the autosomes have been limited to the five cases where homologous arms of an autosome have been attached to the same centromere as reversed metacentrics. There are two reasons for this difference in versatility of the sex chromosomes as opposed to the autosomes.