each nucleolar mass has its own organizer region (belonging to chromosomes, see Hay 1968, or free and segregated from the chromosomes, see Miller and Beatty 1969), it seems logical to assume that the free nucleoli to which certain loops were attached could contain portions of the nucleolar organizer near the loci of the loop forming sites in the Y chromosome.

References: Hay, E.D., 1968, Structure and function of the nucleolus in developing cells. In: Ultrastructure in Biological Systems. The Nucleus. (A.J. Dalton and F. Haguenau, Eds.) Acad. Press, N.Y. and London; Hess, O., 1969, Genetic activities of the Y chromosome in Drosophila. Ann. Embryol. Morphog., suppl. 1: 165-176; Hess, O. and G.F. Meyer, 1968, Genetic activities of the Y chromosome in Drosophila during spermatogenesis. Adv. Genetics 14: 171-223; Miller, O.L. and B.R. Beatty, 1969, Visualization of nucleolar genes. Science 164: 955-957.

Laughnan, J.R., S.J. Gabay and I.N. Montgomery. University of Illinois, Urbana, Illinois. Genetic basis for the exceptional events in Dp(1;1)MNB-8 Drosophila melanogaster males.

Males carrying Dp(1;1)MNB-8, designated the modified long duplication (MLD), and having the genotype f(B^+ os^+)(B os)car (duplicated members in parentheses), are B os^+ in phenotype. When mated with attached-X females, patroclinous sons are mainly of the B os^+ (parental) class. Not infrequently, however, three classes of exceptional sons are produced. The distribution of exceptional offspring among progeny of single pair matings of the above type indicates that the exceptional event occurs almost exclusively in germinal tissues of the MLD parent and that it often takes place at a relatively early stage in the development of germinal elements. Analysis of salivary gland chromosomes reveals that the exceptional events involve a loss of portions of the duplication.-----Genetic analyses (Gabay and Laughnan, 1970) of progenies of MLD male parents from six different strains indicate a striking variation in overall frequency of exceptional events, and in the relative frequencies of the different kinds of exceptions. There have also been instances of stabilization within sublines of strains characterized by a high frequency of exceptional events, and of changes from a relatively stable to relatively unstable or active condition.-----The existence of stable and unstable MLD strains, and the strong tendency for these traits to be inherited through many generations, suggest a genetic control over the exceptional event. The particular mating system we employ, and the fact that, except for sudden changes of the type noted above, the various strains have, over many generations, retained the differences in frequency of exceptional events which they exhibit, make it unlikely that genetic control resides in either the autosomes or in the Y chromosome. On the other hand, since the duplication-bearing X chromosome of an MLD male parent is passed from father to son in each mating cycle, it seems most likely that if exceptional events are under the control of a chromosomal gene, the latter is located in the X chromosome. This hypothesis was tested using marked females that derive one duplication-X chromosome from an MLD stock characterized by a relatively high frequency of exceptional events, and another duplication-X chromosome from an MLD strain that is stable in this regard. These f "unstable" /f^+ "stable" females were mated with wild-type males and f and f^+ MLD sons were test mated with attached-X females to search for patroclinous exceptional sons. Among the 550 progenies from matings involving the f MLD sons, 205, or 37 per cent, had one or more exceptions, while, in similar matings, 458 f^+ MLD sons produced only seven, or 1.5 per cent, progenies with exceptions. These results indicate that genetic control of the exceptional event is carried in the X chromosome. Since forked, the marker used here to screen for sons carrying the X chromosomes from the unstable and stable MLD sources, is close to the distal end of Dp(1;1) MNB-8, and since the screen proved to be highly effective in identifying unstable and stable X chromosomes in the test matings, it appears that the genetic element in control of exceptional events is at a site in, or not far removed from the duplication itself. As noted above, the exceptional events involve a loss of chromosomal material from the duplication; moreover, the array of deficiency types among exceptions from the MLD strains suggests that there are characteristic hot spots for breakage in these strains. Hence there is no reason to assume a separate, closely-linked controlling element in the X-chromosome. For the time being it is sufficient to consider that the X chromosome of an unstable MLD strain differs from that of a stable strain in carrying within the duplication two or more sites that are highly susceptible to breakage and consequential loss of specific chromosomal segments.

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Reference: Gabay, S.J. and J.R. Laughnan, 1970, Genetics 65: 249-265.