Basically the methodology of DNA fibre autoradiography involves lytic buffer (modified after Laughlin & Taylor 1979). The lysate is gently drawn over the slide, air dried and the processed for autoradiography.

Fig. 1b shows different types of labelled segments observed in these DNA fibre autoradiographic studies on the polytene nuclei synchronized at the mid-part of S-phase revealed a predominance of short labelled segments ranging from 2-6 µm with a mean of 5.58±0.27 µm (histogram). The finding suggests that the majority of the replicons are in the process of initiation rather termination in which case (latter) longer labelled segments would have been observed in good number. Works in our laboratory are in progress to substantiate our proposal.

References: Plaut, W. et al. 1966, J.Mol.Biol. 16:85-93; Mulder, M.P. et al. 1968, Genetica 39:385-428; Rodman, T.C. 1968, Chromosoma 23:271-287; Lakhotia, S.C. & A.S. Mukherjee 1970, J.Cell Biol. 47:18-33; Kalisch, W.E. & K.Haegele 1973, Chromosoma 44:265-283; Chatterjee, A.S.Mukherjee et al. 1980, In Development and Neurobiology of Drosophila (Ed: A.Hollaender), Plenum Press, N.Y., pp. 57-83; Achary, P.M.R. et al. 1981, Chromosoma 82:505-514.

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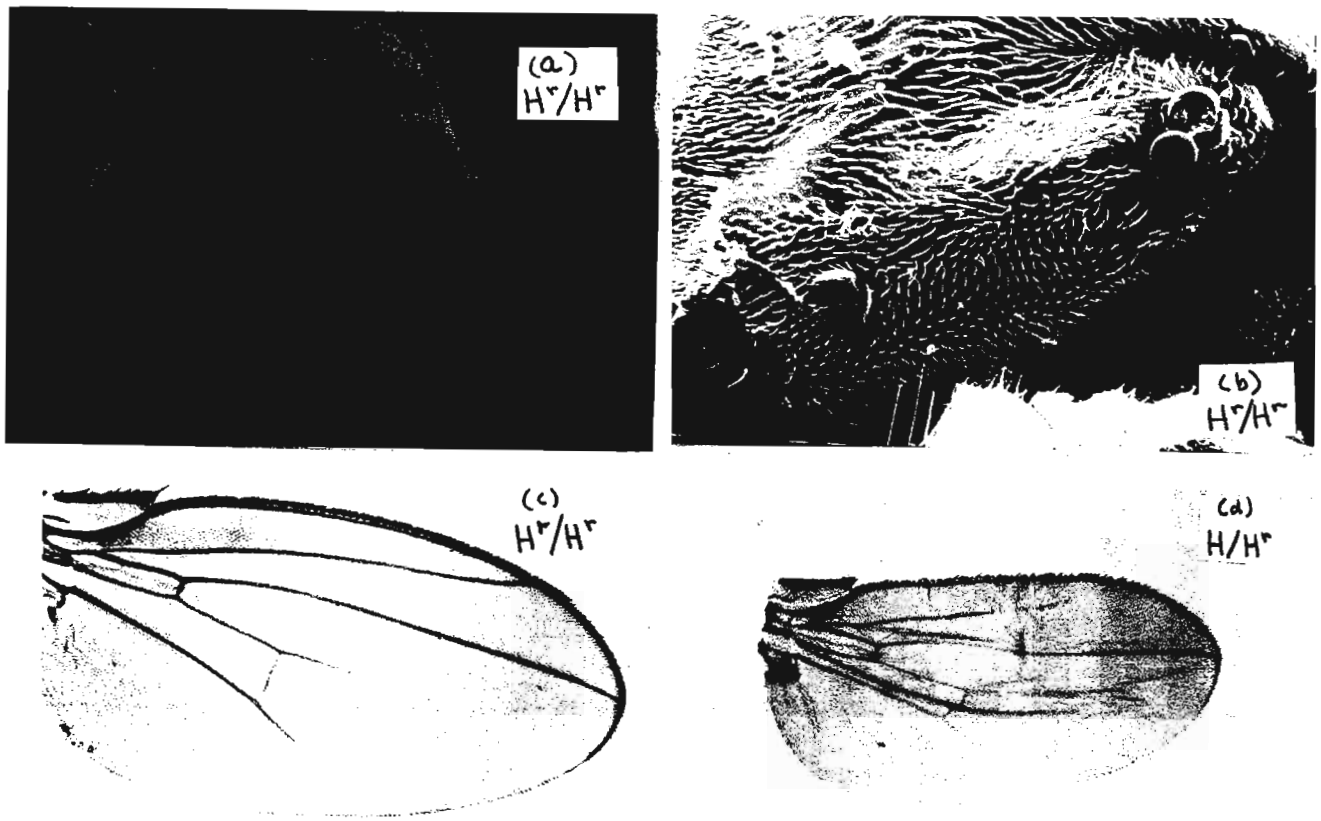
A new allele (H^r) at the Hairless locus of Drosophila melanogaster.

A mutant which produces suppression of a large number of macro and microchaetae has arisen spontaneously in a line selected for low dorsocentral and scutellar bristle number. This mutant is recessive and was found to map near ebony locus. An allelism test indicated that it is a new allele of the Hairless series (location III - 69.5). This allele was named Hairless-recessive and the H^r symbol is proposed to it.

Flies homozygous for H^r have almost all the bristles and hairs substituted with double or triple abnormal sockets (a and b). In wing, L IV and L V veins do not reach the margin (c).



Heterozygotes H^r/H die, probably at the pupa stage. Nevertheless there are some scapers which die a short time after eclosion; these individuals have an extreme Hairless phenotype: they have all the bristles and hairs suppressed or substituted with abnormal sockets, furthermore their wings are reduced and with abnormal L II, L IV and L V veins (d).

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Comparative genetics of neutron- and γ-ray-induced lethal b, cn and vg mutations in D.melanogaster.

It is a well-known fact that neutrons are more efficient than low-LET radiations for producing lethal visibles including those unaccompanied by detectable cytological changes. This fact was interpreted to mean (Muller 1954) that neutrons more frequently than low-LET radiations induce clusters of closely linked lethal and visible mutations which are then recorded as single genetic events. When this interpretation is correct, it can be expected that, in chromosome regions saturated by clusters of closely linked lethal and visible loci, neutrons must more often than low-LET radiations produce lethal visibles that complement to give viable visible combinations. However, if lethal visibles are a kind of the minute rearrangements with pleiotropic expression, such neutron-induced mutants will have lower frequencies of complementation for the lethal phenotype compared to lethal visibles induced by low-LET radiation. To test the alternatives the complementation patterns of 12 black, 13 cinnabar, and 11 vestigal lethal mutations induced by neutrons (0.1-0.85 MeV) or γ-rays (^{60}Co) and preserved by In(2LR)SM5 were first of all investigated through inter-se crosses between each of lethal mutations within the three regions of interest. Further, the extent of deficiencies supposed were determined by testing the survival of b lethal mutations in combinations with nub and j, of cn lethal mutations--with so and blo, and of vg lethal mutations--with sca, vg^C, vg^B, 1(2)C.

Results of the 328 inter-se as well as with reference markers crosses (in toto 16 γ-ray- and 19 neutron-induced lethal visibles were analyzed) are summarized by Figs. 1-3 (irradiation-induced mutations were named by the accepted alphanumeric code). As it can be seen, 80% neutron- as well as γ-ray -induced lethal visibles fail to complement, being deletions that extend for two, three, or more genic units neighbouring the specific loci of interest.

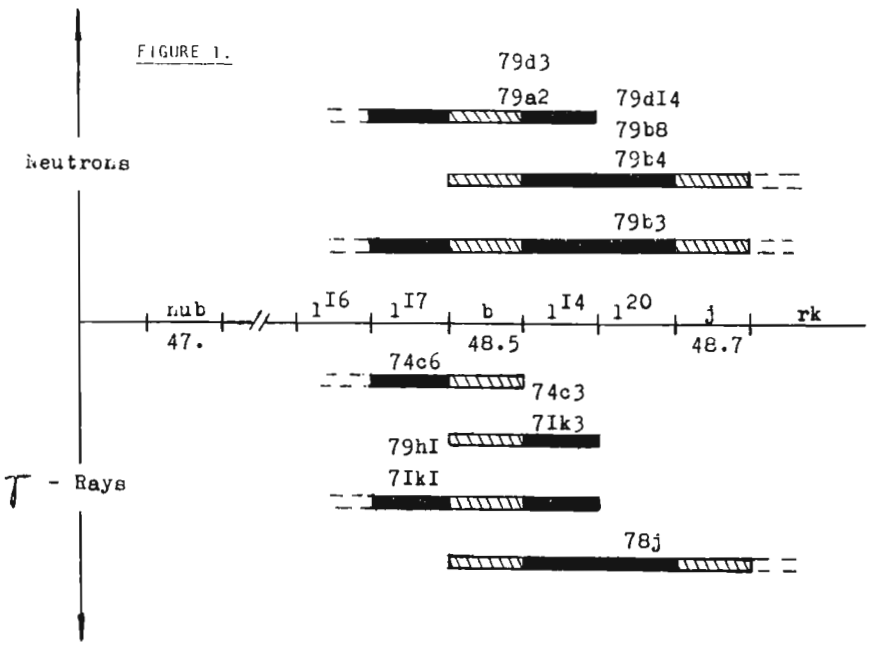

Fig. 1. Complementation map of neutron- and γ-ray-induced b lethal mutations of D.melanogaster as compared with genetic map (see for the latter Lindsley & Grell 1968; Woodruff & Ashburner 1979). Localizations determined by complementation patterns. 5 genetic units were defined. Black, affected units with lethal effects; hatched, units with visible (b or j) phenotype; dashed, further possible extension of the deletion.