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A new embryonic lethal strain originated from a tip mutation of the X-chromosome.

A new embryonic lethal strain, named 1(1)3063, was found from a male of the Hiroshima wild strain by X-ray radiation to 3000r in 1963.

The genetic analysis is as follows:

Crosses	F_1 ♀		F_1 ♂		Ratios in male
y/1-3063 x y	+ 1089	y 1070	+ 5	y 931	5/936 = 0.0053
sc/1-3063 x sc	+ 550	sc 530	+ 2	sc 558	2/560 = 0.0036
pn^2/1-3063 x pn^2	+ 552	pn^2 591	+ 0	pn^2 569	0/569 = 0
w/1-3063 x w	+ 907	w 930	+ 7	w 971	7/978 = 0.0072
car/1-3063 x car	+ 550	car 336	+ 136	car 214	136/350 = 0.389

Thus, the strain possesses a genic mutation or perhaps a small deficiency near pn, and it is of interest that the mutation is adjacent to or included in the tip lantern of the X chromosome. Hemizygotes are killed in the post-middle or late stages of embryonic development. Further studies are in progress at present.

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The linkage group - karyotype relationship in the house fly (Musca domestica L.).

The house fly, Musca domestica (L.) has five linkage groups found by genetic methods (Hiroyoshi, 1960) and six pairs of chromosomes (Stevens, 1908). The normal female has an X-X sex chromosome complement and the normal male an X-Y complement. Several exceptional strains have been recovered, however, where the Y chromosome has undergone a translocation with an autosome, and the males in these stocks may be X-X or X-O and carry the Y-autosome translocation chromosome. The linkage groups have been arbitrarily numbered in two different ways by two independent groups without regard to karyotype relationship. The karyotype has been worked out (Boyes, 1962), but has not been related to the linkage groups, so that some linkage groups have as many as three different numbers with respect to chromosome designation. The present work has employed translocations and their cytological analysis as a method of determining which linkage groups should be assigned to the various chromosome pairs in the house fly karyotype. Sex-linked visible and lethal mutation tests were also performed in order to test for the presence of markers on the X-chromosome. Neither lethal nor visible mutations have been found as a result of these tests. This indicates that the five linkage groups belong to the five pairs of autosomes and that markers for the sex chromosomes are as yet unavailable. The X- and Y-chromosomes appear to be completely heterochromatic in metaphase of mitosis. A scarcity of visible or lethal genes on the sex chromosomes would be expected on the basis of results obtained from other insect species.