

Williamson, John H. Biology Division, ORNL and University of California, Riverside, California. Identification of Y fragments with two doses of y^+ or B^S .

reciprocal exchanges between the two arms would produce fragments with two doses of y^+ or two doses of B^S . Flies carrying two sc^8Y 's have extra hairs in the second posterior wing cell (Schultz, via Lindsley). This suggested to Parker (personal communication) that Y fragments with two doses of y^+ may cause extra hairs in the wings of flies carrying the fragment. Of 190 y^+ fragments recovered in males, 67 (35.3%) carried 4R and 81 (42.6%) caused extra hairs in the wings of flies carrying the fragments. Not only did the wings possess extra hairs but there were also extra vein cells in the wings, especially associated with the posterior cross vein. These abnormalities are probably due to variegation of the Hw^+ locus in the sc^8 duplication, two doses of which are necessary for expression. In a sample of 56 B^S fragments, 29 (51.8%) produced smaller eyes than did one dose of B^S .

The real proof of isomarked Y fragments is to make detachments of attached-X's using these fragments and to analyze all of the detachments for y^+ or B^S and 4R. This has been done and over 90% of the detachments made with presumptive isomarked fragments have been shown to be X-Y or X-4R detachments, while less than 70% of the detachments made with $?Yy^+$ or $B^SY?$ fragments were so identified. Thus approximately 80% of the y^+ fragments and 50% of the B^S fragments have been identified, allowing inferences as to the types of induced exchanges producing Y fragments. (ORNL is operated by Union Carbide Corporation for the U.S.A.E.C.) Parker, D. R. 1965. Mut. Res. 523-529.

Frye, Sara H. P.O. Box 267, Irvine, Kentucky. Pilot experiments involving X-ray induced mutant phenotypes (dumpy and yellow) in Scute-19i chromosomes of mature sperm in *Drosophila m.*

Parker (1965) has suggested that non-reciprocal exchanges between the arms of the Y chromosome may account for a large proportion of Y fragments induced in irradiated females. When the irradiated Y chromosome is the B^SYy^+ non-

Young males, heterozygous for scute-19i second chromosomes, were X-rayed at 2-kr (200 r/minute) and immediately mated to virgin-females containing mutant markers, yellow (y); echnoid (ec), dumpy (dp), and clot (cl), i.e., Y / y ; sc^{19i}/S InCyL, Cy 2-kr $\sigma\sigma$'s X y/y ; ed dp cl/ed dp cl vv $\varphi\varphi$'s.

Four successive post-treatment 24 hr. broods (i.e., 4 groups of y ; ed dp cl vv $\varphi\varphi$'s) and several transfers of the inseminated females from each brood were made to obtain as many F_1 progeny as possible.

The expected F_1 phenotypes of the above mating were (+) and (y ; S Cy), however, only the F_1 (+) progeny were counted and examined for the recovery of exceptional mutant phenotypes. Thirty-four mutant phenotypes (31 dp's; 3 y's) were recovered from approximately 26,000 F_1 + $\sigma\sigma$'s and + $\varphi\varphi$'s (representing 2-kr treated scute-19i chromosomes and three mutant phenotypes (3 dp's; 0 y's) were recovered from small scale controls ran six months prior to the treated series. One yellow mutant was progeny-tested and found to be transmissible, but it was not tested for achaete. Another yellow mutant was likely to have been a chromosomal deficiency, because it was observed to be phenotypically clot with a Minute bristle effect.

The proximity of the dumpy and yellow regions in scute-19i chromosomes (see Frye, DIS 42:80) and the absence of chromocentral heterochromatin (CH) made scute-19i chromosomes appear to be favorable for the induction of mutant phenotypes in order to provide an answer to the problem as to whether two or more closely linked markers are ever involved in an X-ray induced yellow mutant phenotype where CH is not adjacent to the y^+ ac^+ region.

The relative frequency of yellow mutants induced by 2-kr in scute-19i chromosomes is less than the frequency of either dp's 2-kr induced in scute-19i chromosomes or y's induced in scute-8 chromosomes (where CH is adjacent to the y^+ ac^+ region) via 2-kr. 38 $y^- sc^8 B \varphi\varphi$'s were recovered from 19,108 $y^+ sc^8 B/y w$ In49 f $\varphi\varphi$'s (author's 1964 Texas data). Yellow mutant phenotypes X-ray induced at a variety of X-ray doses often involve closely linked markers (Frye, 1958, 1959, and 1961) in scute-8 chromosomes of different germ cells.

The scute-19i experiment reported here did not solve the problem. Work supported by NSF, estate of the author's deceased father, and USPHS.