

4. The duplication of specific chromosome segments by crossing translocations involving the same chromosomes.

The technique for the duplication of specific chromosome segments was first proposed by H. J. Muller (Journal of Genetics 23:299-334) in 1930. In 1956, Gopinath and Burnham worked out the problem in great detail (Genetics 41:382-395).

Pairs of translocations suitable for the duplication of chromosome segments containing the y, wx, ae, or su locus have been crossed with each other. It is hoped that the duplication of these loci will modify the chemical composition of the corn endosperm. Also some information about gene action should result from this work. If a recessive gene is an amorph, its duplication should have no effect. If a recessive gene is a hypomorph, then its duplication should result in a phenotype which approaches or exceeds the dominant phenotype.

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1. A new gene to mark the distal end of the short arm of chromosome 6.

In a previous newsletter (No. 33 p. 102) a recessive ragged seedling character here designated rgd was shown to be on the opposite side of y from ts8 and later to be to the left of y. F_2 repulsion data were obtained from 9425 seedlings from 29 ears with the genotype rgd y / + Y classified as follows:

$$4810 \text{ } \underline{+ Y} : 2169 \text{ } \underline{rg Y} : 2409 \text{ } \underline{+ y} : 37 \text{ } \underline{rg y}$$

which indicates approximately 13% recombination and places rgd very close to po.

In 1960, one selfed ear from a plant with the genotype + po Y / + /rgd + y ts8 and 3 from plants with the genotype + po Y / rgd + y were obtained. Seeds were grown and plants which shed pollen were selfed. Plant classifications from these 4 F_2 progenies are in Table 1.

Table 1

Phenotype	60-4108-3	60-4108-5	60-4108-6	60-4108-10
+ Y +	88	70	126	54
po Y +	45	28	48	32
+ Y ts8	2	--	--	--
- Y -*	54	41	40	33
+ y +	0	17	41	15
po y +	0	1	1	3
+ y ts8	27	--	--	--
- y -*	43	31	36	27
Sum	259	188	292	164

* Seeds did not germinate or plants did not emerge.