Ehrman, Lee* and Diether Sperlich.** The Rockefeller Institute. XXY Drosophila paulistorum ♀♀.

At least three different kinds of hybrid sterility occur within the superspecies Drosophila paulistorum. This superspecies consists of six races or incipient species; hybrids between the races are fertile as ♀♀ but sterile as ♂♂ (Dobzhansky and Spassky, 1959). The hybrid ♀♀ can be backcrossed to ♂♂ of the parental races, and the backcross progenies consist again of fertile daughters and sterile sons. The sterility of the backcross ♂♂ depends upon the genetic constitution of their mothers; all the sons of a ♀ carrying any mixture of the chromosomes of the parental races are sterile, even if some of these sons themselves carry only the chromosomes of a single race (Ehrman, 1960). This is, then, an instance of genic sterility operating through a maternal effect, the genes responsible being distributed in all three pairs of the chromosomes which the species possesses. Evidently, the sterility of the F_1 ♂♂ is due to a different mechanism, since F_1 hybrids are descendants of pure rather than hybrid mothers.

A third kind of sterility has been reported (Ehrman, 1963), so far in only a single cross, between strains from Mesitas and those from Santa Marta, Colombia. Both the Mesitas and Santa Marta strains belong to the Transitional race of D. paulistorum. The cross Mesitas ♀ x Santa Marta ♂ gives fertile hybrids of both sexes, but the male progeny of the reciprocal cross is sterile. The hybrid ♀♀ can be backcrossed to males of either parental strain; the ♂ progenies of these backcrosses are sterile if they carry the Y chromosome of Mesitas in the Santa Marta cytoplasm, or the Y chromosome of the Santa Marta strains with the cytoplasm of Mesitas.

With this new evidence in mind, an attempt was made to acquire Drosophila paulistorum ♀♀ carrying a Y chromosome (metacentric and indistinguishable from the X chromosome at metaphase, in this species); experiments were planned in which the fertility or sterility of interracial hybrid males would be ascertained when they had received their Y chromosome from their mothers. ♂♂ of the Lancetilla, Honduras strain of the Centro-American race were given a dosage of 3000r at one time and three separate stocks were easily established in which the ♂♂ carried a Y-II chromosome (carrying a dominant marker gene) translocation. Occasional nondisjunction at meiosis would then produce the desired individual ♀♀ carrying a Y chromosome. However, we could never get them to breed despite constant care. One such ♀ laid eggs, none of which hatched.

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Anderson, Wyatt W. Rockefeller Institute. Frequency of spontaneous wing vein abnormalities in experimental populations of Drosophila pseudoobscura.

Many of the studies of polygenic variability, classical as well as recent, have utilized abnormalities of wing venation in Drosophila. They have shown that alleles which modify the normal wing venation are widespread, although individually rare. By recombination and segregation alone, combinations of alleles necessary for various wing vein abnormalities are expected to occur in low frequencies.

In a study of body size in six experimental cage populations of Drosophila pseudoobscura, 3,326 wings were examined. The six cages were all begun from offspring of crosses among forty strains isolated at Mather, California; Bryce National Park, Utah; Ferron, Utah; and Gunnison, Colorado. The cages were maintained for six years before these measurements. One wing was examined from each fly. As shown in Table 1, the low frequencies of aberrant venation patterns which are expected, do occur.

Table 1

Type of Wing Vein Abnormality	Number Observed
posterior cross vein absent or reduced	4
anterior cross vein forked	2
posterior cross vein forked	3
Total aberrancies	9
Total flies examined	3,326
Frequency spontaneous wing vein abnormalities	0.28%

Kang, Y. S. and C. C. Lee. Seoul National University, Korea. The frequency of reciprocal translocation in D. melanogaster irradiated with 500r of X-rays.

The determination of the frequency of reciprocal translocation in D. melanogaster, Seoul strain males irradiated with 500r of X-rays was carried out in the present study. The reciprocal translocation was observed among Y, 2nd and 3rd chromosomes.

The frequency was determined at 3 intervals and during spermatogenesis after irradiation.

In 1963, Ives observed different frequencies in several Oregon-R heterozygotes which were irradiated with the same dosages of X-rays. The other works of various authors were represented in the total frequency of the translocation.

Drosophila melanogaster (Seoul strain) males and vg:se mutant females were used for the materials in the present experiment.

The results are summarized in tables 1, 2 and 3.

Table 1. The frequency of reciprocal translocations in control group

Time eggs were laid after mating (days)	Time mating was made after hatching (days) 1 - 2 No.of tests	No. of trans.%	3 - 4 No.of tests	No. of trans.%	5 - 6 No.of tests	No. of trans.%	7 - 8 No.of tests	No. of trans.%	9 - 10 No.of tests	No. of trans.%
1 - 2	280	A 0 B 0 C 0 Tot. 0 0.000	270	A 0 B 0 C 0 Tot. 0 0.000	310	A 0 B 0 C 1 Tot. 1 0.322	255	A 1 B 0 C 0 Tot. 1 0.392	365	A 0 B 0 C 0 Tot. 0 0.000
3 - 4	200	A 0 B 1 C 0 Tot. 1 0.500	210	A 0 B 1 C 0 Tot. 1 0.476	290	A 0 B 0 C 0 Tot. 0 0.000	250	A 0 B 0 C 0 Tot. 0 0.000	338	A 0 B 2 C 0 Tot. 2 0.591
5 - 6	315	A 0 B 1 C 0 Tot. 1 0.314	180	A 0 B 1 C 0 Tot. 1 0.555	350	A 1 B 0 C 0 Tot. 1 0.285	304	A 0 B 1 C 0 Tot. 1 0.329	365	A 0 B 1 C 0 Tot. 1 0.277
Grand tot.	795	2 0.251	660	2 0.203	950	2 0.210	809	2 0.247	1068	3 0.280

A: Translocation between Y and 2nd chromosomes.
B: Translocation between Y and 3rd chromosomes.
C: Translocation between 2nd and 3rd chromosomes.