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Previous studies of the white-ivory mutant (1 - 1.5) (Lewis 1959, Bowman 1965, Bowman and Green 1966) have shown that in contrast to spontaneous germinal reversions, X-ray-induced reversions occur in clusters. The two events are further differ-

entiated by the effect of the homologue on the frequency of exceptional wild-type progeny. The frequency of spontaneous germinal reversion is essentially zero in males and in females that are heterozygous for w^1 and a deficiency that includes the white region. These observations are interpreted to mean that spontaneous germinal reversion occurs primarily during the first meiotic prophase and is dependent on regular synapsis between homologues while the effect of X irradiation is restricted to premeiotic cells. It was of some interest, therefore, to determine if the somatic cells of males and females differ in their sensitivity to X-ray-induced reversion of the mutant.

Eggs from w^1 parents were collected over a 12 hour interval on baker's yeast. Three days later, i.e. 72 ± 6 hours after egg deposition, the larvae were collected by washing the yeast through a 60 mesh sieve. The larvae were transferred to filter paper and then irradiated with a Seifert "Isovolt 150" operated at 150 kvcp, 12 ma, with 1 mm Al filtration. The target to specimen distance was 50 cm and the dose rate, ca. 90 r/min. The treated larvae were then placed on standard medium to complete development. Throughout the experiment, the temperature was maintained at $25 \pm 1^\circ\text{C}$.

After eclosion, the eyes of the imagoes were scored for wild-type spots using 25X magnification. Under these conditions, subommatidial mosaics as well as larger spots are readily detected. The results are shown in the figure. It is immediately obvious that the frequencies of mosaics in both males and females are proportional to dose and that the slope of the line for females is about twice that of the line for males. In fact, the two regressions fit the equation $m = n(0.008 + 0.07 X)$ where m is the number of mosaic spots per fly, n is the number of w^1 loci per cell, and X is the dose in kiloroentgens. The coefficient of correlation is 0.95. Since the white locus is sex linked, n is 1 for males and 2 for females. These results show that there is no detectable difference in the frequencies of X-ray-induced reversion of w^1 in the somatic cells of males and females and are consistent with the postulated premeiotic origin of induced germinal reversions. Supported by National Science Foundation grant GB-4539.

