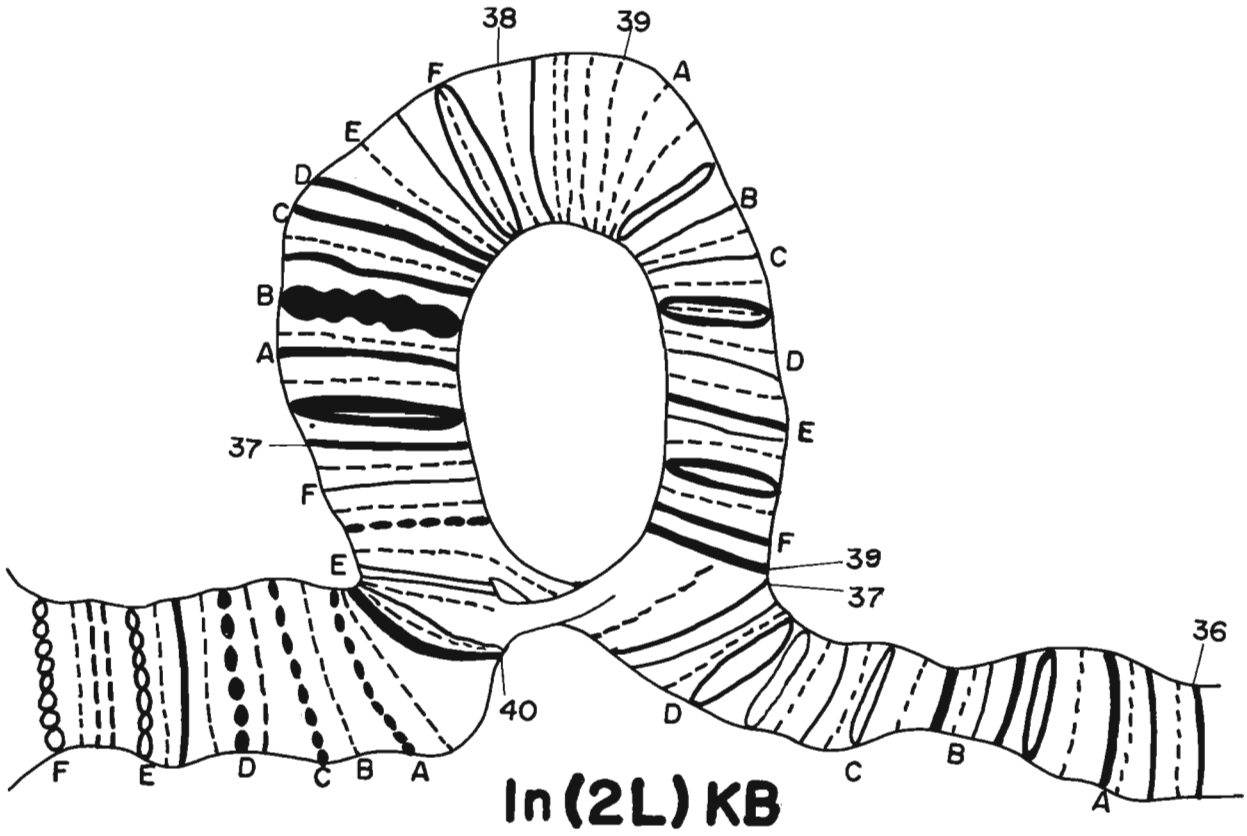

Williamson, John H. University of California, Riverside, California. EMS-induced mutants in the Y chromosome of D. melanogaster.

Young D. melanogaster males carrying a doubly marked Y, $B^{S}Yy^{+}$, were fed ethyl methanesulfonate and mated in mass to attached-XY, 1(1)J1 y w / In(1)FM6, y^{31d} sc^{8} dm B females. Male progeny of the genotype attached-XY, 1(1)J1 y w / $B^{S}Y^{*}y^{+}$ were mated individually to C(1)TA, v / 0 females. (The y^{+} duplication on the Y carries the normal alleles for 1(1)J1 and thus covers the lethal in the X chromosome. The * indicates a treated Y. C(1)TA is a tandem acrocentric compound X chromosome in which crossing over generates single rod X's.) The progeny of such crosses were C(1)TA /$B^{S}Y^{*}y^{+}$ and XY / X females and X / $B^{S}Y^{*}y^{+}$ males; the regular males died because of the uncovered lethal. The progeny of each cross was transferred to fresh medium in vials. If the X / $B^{S}Y^{*}y^{+}$ males were sterile, no larvae were observed in that vial and the $B^{S}Y^{*}y^{+}$ was extracted from the C(1)TA / $B^{S}Y^{*}y^{+}$ females, put into stocks and subsequently retested for sterility. From a total of 4236 tested Y chromosomes 96 were recovered which had at least one mutant in the male fertility genes. Of these 15 were mutant in Y^{S}, 61 in Y^{L}, 13 in both Y^{S} and Y^{L}, in 4 the mutant could not be localized and 3 were lost. In seven cases males carrying the mutant Y were sterile when reared at 25°C, but were at least partially fertile when reared at 18°C. Nine other mutant Y chromosomes were subsequently found to be simultaneously mutant at the bobbed locus in that the Y chromosome would not recover C(1)DX, y f females when reared at 25°C. However, at 18°C two of these mutant Y's were found to recover 20-30% of these females although all were extremely bb in phenotype. Many more females died as very late pupae or were so weak as to be unable to emerge from the pupal case.