

The loci in the non-multiple-recessive X-chromosome of the "vix" stock in which it is practicable to recognize mutants and test them genetically fall into the following phenotypic categories: eye color, 7 (car, g, ras, cm, rb, w, pn); eye form, 3 (sy, B, ec, although B makes sy and ec more difficult); wing conformation, 3 (od, dy, ct); body color, 1 (y, although ptg might perhaps be used also); in addition an extreme "minus" mutation in sc^8 could be recognized, and dominants such as N, Bx, Sc, Minutes, Tu and Tul (see my "New Mutants" report in this issue of DIS) would also be detectable. For comparison with visible mutations arising at specific loci in the X of the male, the above mentioned "Maxy-vermilion" stock provides a close counterpart to "vix".

In some of the work on specific-locus mutations it is desirable to know how many lethals are arising at the same time, so that the results may be calibrated to a given standard of spontaneous or induced mutation frequency, as was done in earlier work by the Valencias and myself and by Schalet. The "vix" stock lends itself to such tests by merely crossing the females (whose mothers should have been derived by random sampling from the same cultures as supplied the flies for the specific locus tests) to males that have a Y of the type $lJ1^+.Y$ or $sc^8.Y$, in order to "cover" the $lJ1$ of the X-chromosome to be tested and thus allow another lethal to be recognizable by the absence of sons having the X under investigation. Of course the mothers of the females thus tested should have been bred individually, so as to prevent pre-existing lethals from being confused with the newly arising ones that are to be scored.

Abrahamson, Seymour and Helen U. Meyer.
University of Wisconsin. Use of Minute
to facilitate studies of mutations in
second chromosomes.

The most laborious step when breeding for autosomal mutations is the collection of virgin females in the F_2 generation to cross with brothers of the same, balanced genotype. A new and rather simple method facilitates this step by having the unwanted type of F_2 heterozygous for Minute

while the class needed for inbreeding is non-Minute. Due to the fact that the Minute flies have a considerably longer period of development than the desired type of non-Minute, Curly flies, only the latter are present in the F_2 cultures during the first 2-3 days of hatching. By taking advantage of this period one eliminates the need for getting Curly virgin females. Mrs. Gloria Daniels of our laboratory has recently demonstrated that raising the F_2 cultures at $16-19^\circ C$ further extends the difference in developmental time between the Minute and the non-Minute flies. The stock used for this purpose ("M") has the composition $S\ M(2)S7\ bw^D/dp^{txI}\ Cy, Ins0\ pr\ cn^2\ sp$ and is of good viability. It is not necessary to have special second chromosomes in the P_1 generation; wild type or marked chromosomes may be used.

The simplest procedure is to cross the P_1 generation to the M stock, select Curly F_1 males and then cross these again, individually, to 2-3 virgin females from the M stock. Parents should be removed. In F_2 one should use offspring from the first 2-3 days of hatching. These are usually all of the desired, Curly type, although occasionally a Minute, brown fly may already be present. However, their offspring can readily be identified by these markers when scoring for lethals in F_3 .

We prefer to use a somewhat more elaborate scheme and combine this method with H. J. Muller's scheme of "criss-crossed" second chromosome lethals, S, Cy, dp^{tx} , and Sp. (Sp is now being incorporated into the "M" stock). The P_1 generation is first crossed to a stock $dp^{tx}\ Sp\ pr\ cn\ bw\ sp/S^2\ ls\ Cy, InL\ pr\ cn\ bw\ sp$. This has the advantage that both types of F_1 males, Curlies and non-Curlies, may be utilized. Then one proceeds as described above. A few, late hatching homozygous Curly survivors will appear along with the Minute, brown flies in F_2 . These can be distinguished from the regular Curlies by also being homozygous for pr and sp.

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