

Lee, William R. The University of Texas. A modified "Maxy" stock that produces only females of the proper type.

The "Maxy" stock (Muller and Schalet, 1957, DIS 31:144) used for detection of specific-locus mutations in the X-chromosome regularly produces only one type of female and male. In experiments where sperm are treated with a mutagenic agent, males of the F_1 generation are useless except to detect the absence of a marked Y as is possible in a modified "Maxy" stock described by Lee (1963, DIS 38:87-88). Therefore, for some experiments it is desirable to produce only females of the proper type to increase the efficiency of scoring and to provide virgins for the crosses necessary to make a balanced stock for testing for X-chromosome lethals in the F_2 and succeeding generations.

To accomplish this a stock was made with the following composition: $sc^{8.Y.B^S}/lJ1\ sc^{J1(+)}In49\ Fl\ g\ B^{M1}$, In/ "Multiple from the Maxy Stock of Muller and Schalet (1957)." When virgins from this stock are crossed with males of the composition, $IN49\ v\ ptg\ oc\ Fl\ B^{M1}In$, the unwanted class of females is killed by Fl being homozygous and all males are killed either by lJ1 or the l in "Multiple Maxy Chromosome." It was feared that the use of both lJ1 and Fl would greatly reduce the viability; however, this stock has been found to have good viability in our laboratory and gives a normal ratio of males to females. Fl is known to act as a dominant or semi-dominant in some stocks (Muller and Zimmering, 1960, Genetics, 45:1001-1002); however, in the stocks reported here (as a result of selection by the author when these stock were initiated) it acts as a recessive.

Non-disjunction produces sterile vermilion males and garnet females. The latter can readily be distinguished from vermilion garnet females produced by a garnet mutation in the treated chromosome. The v in the treated chromosome also makes the scoring for other eye colors more objective. The possibility of fertile males in the F_1 generation being produced by non-disjunction from a female that has a Y is eliminated by using $sc^{8.Y.B^S}$ in the parental stock and discarding any B^S females when collecting virgins.

The modified "Maxy" stock described in this report has also been useful in our laboratory in producing automatic virgins for the scheme described by Lee (1963) of detecting loss of either the X or Y chromosome in combination with detecting mutations at specific loci.

In both the breeding scheme reported here and the one previously reported (Lee, 1963), mutations are induced in the $IN49\ v\ ptg\ oc\ Fl\ B^{M1}$ chromosome. The spontaneous rate of recessive lethals for this chromosome has been found to be 0.15% (9,155 chromosomes tested) and only 2 visibles have been found in 20,900 F_1 females.

This investigation was supported by Public Health Service Research Grant GM11449-02 from the National Institute of General Medical Sciences).

Scharloo, W. and W. Vreezen. Genetisch Laboratorium der Rijksuniversiteit, Leiden, The Netherlands. Selection for increased 4th vein interruption in Hairless.

A gap of the 4th vein is one of the features of H. This interruption responds easily to a temperature change when the vein is almost complete, but with larger interruptions changing the expression by temperature becomes increasingly difficult. The same character in ci^D is very difficult to change when the 4th vein is nearly complete, but can easily be altered at more extreme expression (Scharloo, 1962). In preliminary experiments it was found that selection for more extreme 4th vein interruption in H leads to accumulation of modifiers which cause a 4th veing interruption even in the absence of H ("assimilation" of the mutant character). Assimilation never occurred in long term selection for ci^D fourth vein expression (Scharloo, 1962 and DIS 38). With the purpose of testing whether the assimilation of the H 4th vein interruption is a property associated with the H mutant, 4 selection experiments were done. H and the new mutant H^{57c} (obtained from H. Gloor) were introduced in the backgrounds of the Pacific and Kaduna cage populations. All lines responded rapidly to selection for larger 4th vein interruption. The first assimilated flies appeared in all lines between generations 4-6, but the speed of further increase in frequency and expression differed widely. Introduction of chromosomes with dominant markers showed that factors on both large autosomes are involved. The frequency distributions of H expression show large variability in the first generations of the experiments when expression still overlaps with wild type, and very low variability when more extreme expression is reached. This confirms the conclusion of the temperature experiments that change is relatively easy in the neighbourhood of wild type. The introduction of chromosomes with dominant markers revealed that differences in modifiers also have larger effects when the 4th vein is almost complete.

A gap of the 4th vein is one of the features of H. This interruption responds easily to a temperature change when the vein is almost complete, but with larger interruptions changing the expression by temperature becomes increasingly difficult. The same character in ci^D is very