Barr, H.J. University of Wisconsin, Madison, Wisconsin. Analysis of a putatively bb lethal Y chromosome.

When males from a laboratory stock of D. melanogaster homozygous for yellow and not known ever to have been exposed to a mutagen were crossed with C(1)DX females lacking the basal heterochromatin containing bobbed, no F_1 females were obtained. When crossed to attached-X females not lacking basal heterochromatin, such males gave progeny of both sexes.

Lines carrying the Y chromosome from the original, yellow stock were established by obtaining individual males whose Y chromosome had failed to rescue C(1)DX females at 25°C and crossing them to Oregon-R females. These lines are being maintained and studied. A total of 200 males randomly chosen from these lines proved fertile when tested individually. (Cf. Williamson, 1968, Genetics 60: 238) The yellow allele has been lost from these lines, probably by natural selection for the wild type.

These Y chromosomes are referred to as putatively bobbed lethal because the cross to C(1)DX females cannot rule out the possibility that the Y is deficient or mutant for a region of the basal heterochromatin that is necessary for survival other than the bobbed "locus". Thus Y chromosomes failing to rescue C(1)DX females may: (1) carry a deletion, mutation, or position-effect rearrangement involving the bobbed "locus"; (2) carry a deletion, mutation or position-effect rearrangement involving some part of the basal heterochromatin other than the bobbed "locus"; or (3) both (1) and (2). (Cf. Thompson & Braver, 1969, Genetical Res. 13: 325.)

Oregon-R and Canton-S stocks were tested for the presence of putatively bobbed lethal Y chromosomes by crossing singly 100 males from each to C(1)DX females at 25°C. No Y chromosomes that failed to rescue the F_1 C(1)DX females were found.

The pattern of "drift" toward wild type of the stocks carrying the putatively bobbed lethal Y chromosomes and the role of these chromosomes in suppressing variegating position effect have been studied and will be reported elsewhere.

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Kinross, J. and A. Robertson. Institute of Animal Genetics, Edinburgh, Scotland. Egg laying and survival rates in population cages of D. melanogaster.

Our usual method of keeping population cages of D. melanogaster has been to add a pot containing 350 cc of standard agar food at weekly intervals, leaving each pot in the cage for 3 weeks at 25°C. The adult population then reaches a stable level of about 5,000. Attempts have been made to measure various characteristics of the life cycle using stocks containing marker genes substituted into a standard background. This involved putting known numbers of marked eggs onto pots in the cages at different times to measure survival to emergence and, by inference, the number of eggs laid on the pot in the cage. The results are as follows:

i. About 6,000 adults emerge from each pot. The average length of life of adult flies must then be somewhat less than a week.

ii. The number of eggs laid was highest on new pots (about 12,000 per day) and fell off as larval activity became greater. The average number of eggs laid by each female in her life time was around 20.

iii. The survival of eggs from laying to emergence was highest (about 40%) for eggs laid on the pot in the first two days but had declined almost to zero by the 5th day.

iv. It must follow from the rate of egg laying that, in order to maintain a stable population size, about 10% of all eggs laid will lead to adult flies.

v. The average weight of flies declined from an initial value of 1 mg to a minimum of 0.5 mg after 10 days of emergence and then increased once more.

vi. Since the average time from egg laying to emergence in these conditions is 15 days and the average length of life of adults is of the order of 7 days, it follows that the generation interval will be approximately 20 days.