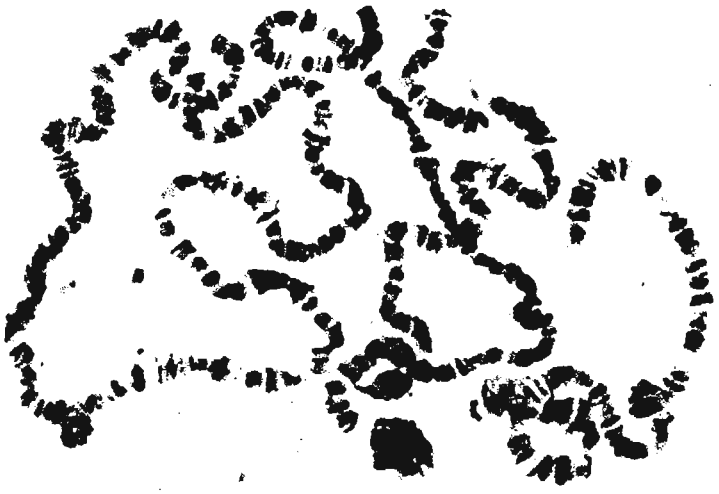

Fig. 2. Salivary gland chromosomes of D. circumdata.

aurantica and Averhoa carambola at a picnic area beside a waterfall. A total of 40 isolines were established in the laboratory from further collections in August, November and December 1982. The flies were caught by the sweeping method, in all cases around mid-morning. Cultures were raised on cornmeal-agar medium supplemented with live yeast. Chromosome studies were carried out on the next 1-3 generations.

Larval salivary gland chromosomes and metaphase chromosomes prepared from larval brain tissue were stained with aceto-orcein. D. circumdata has a chromosome number of 2n = 12. The metaphase karyotype consists of 5 pairs of rods and one pair of dots. The Y chromosome is rod-shaped and approximately half as long as the X chromosome (Fig. 1). The polytene chromosome configuration comprises 5 long arms and one very short arm (Fig. 2). No variation was detected, either in the karyotype or in the salivary chromosomes analyzed for heterozygous inversions.

References: Duda, O. 1926, Suppl. Ent. Berlin 14:42-116; Wilson, F.D., M.R. Wheeler, M. Harget and M. Kambysellis 1969, Univ. Texas Publ. 6918:209-253.

Crossley, S. and I. Taylor. Monash University, Clayton, Victoria, Australia.

Pulse song during courtship breaks by ebony mutants of D. melanogaster.

The courtship of ebony mutants of D. melanogaster differs from the wild type in a number of ways (Crossley and Zuill 1970; Kyriacou 1981). One difference is that during breaks in courtship, i.e., when the male is not oriented to the female, ebony males run in a zigzag path opening and closing their wings as they run (wing flicking). Rapid locomotion and the form of wing movement distinguish wing flicking from inappropriate vibration as defined by Connolly, Burnett and Sewell (1969).

In assessing the stimulating quality of male courtship, it is customary to ignore behavior during a courtship break. This behavior should not be disregarded if it includes auditory stimulation. The purpose of this study is to compare the acoustic output from vibration and from wing flicking in ebony males.

Seven pairs of 3-4 day old ebony flies were observed singly in observation cells (23 mm diameter, 7 mm deep). Auditory and visual components of behavior were recorded on videotape (Crossley and McDonald 1980). Sounds were traced on light-sensitive paper, using a Visilight oscillograph, and measured manually. Wing position during vibration and wing flicking was compared by viewing single frames of the video-record at 1/50s intervals.

	Mean i.p.i.(msec)	S.E.	N
Vibration pulse song	45.4	2.28	19
Wing flicking pulse song	42.3	1.01	65
($t = 1.39$, $df = 82$, $p > 0.05$)			

The acoustic output resulting from wing flicking consists of a series of pulses similar to pulse song produced by vibration. There is no significant differ-

ence between mean i.p.i. of wing flicking and vibration pulse song.

Vibration, in addition to pulse song, produces sine song. Wing flicking differs from vibration in this respect because sine song is absent. Inappropriate vibration, which occurs when ebony males orient to objects such as the stopper closing the cell, consists of pulse and sine song.

The form of wing movement also differs. During vibration and inapproriate vibration one wing is extended to 90°. Wing flicking consists of spreading both wings, one more than the other. Another difference concerns the female. Males wing-flick having lost contact with the female. They make quick turns from left to right as they run, as if they are searching for the female. During vibration the male follows or stands facing the female. Male behavior during inappropriate vibration is as if the female is present. This suggests that orientation to a female is necessary for a male to sing sine song but not pulse song. Movement associated with wing flicking is unlikely to inhibit males from singing sine song, because males sing both sine and pulse when following females.

Pulse song emitted during courtship breaks may influence female receptivity in all flies showing wing flicking, e.g., non-phototactic mutants such as tan, and wild-type mating in darkness. The absence of sine song from breaks may reflect differences in function between pulse and sine song. Experiments to investigate this further are in progress in our laboratory.

References: Connolly, K., G. Burnet and D. Sewell 1969, Evol. 23:548-559; Crossley, S. and E. Zuill 1970, Nature 225:1064-1065; Crossley, S. and J. McDonald 1980, DIS 55:150-151; Kyriacou, C.P. 1981, An. Beh. 29:462-471.

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Dhingra, G. and N. K. Vijayakumar.
Haryana Agricultural University, Hissar, India. Non-mutagenic effects of Malathion, an organophosphorous insecticide, on D. melanogaster.

A tremendous increase in the use of pesticides has occurred to save crop plants from huge losses due to various forms of pests. An unwarranted danger associated with the extensive use of pesticides is that they may be detrimental to the non-target species, especially mankind, with respect to their immediate toxic and long-term genetic effects. Taking this into consideration, Malathion, a widely used organophosphorous insecticide, was tested for mutagenicity using D. melanogaster as the test system.

Oregon-k and Muller-5 strains of D. melanogaster formed the materials for the present study. Malathion was dissolved in acetone and fed to the flies at concentrations of 2.00 and 1.00 ppm. The insecticide was mixed in the cornmeal-yeast-agar medium and the flies were exposed to it throughout their developmental stages, from eggs to adults. The dominant lethal and sex-linked recessive lethal tests were carried out. The procedure followed for scoring is described in detail by Wurgler et al. (1977). In the present experiments, three to four day old treated males were used to test for the induction of dominant and sex-linked recessive lethals. The tables incorporate data on the frequencies of dominant and sex-linked recessive lethals in experimental

Table 1.

Concentration	No. of eggs tested	No. of unhatched eggs	Percent lethality ± standard error
2.00 ppm	1158	295	25.47 ± 0.05
1.00 ppm	2712	948	34.96 ± 14.28
Experimental control Acetone*	1337	381	28.50 ± 4.81
Control	903	213	23.59 ± 0.43

Table 2.

Concentration	No. of chromosomes tested	No. of lethals produced	Percent lethality ± standard error
2.00 ppm	777	4	0.515 ± 0.030
1.00 ppm	524	2	0.380 ± 0.160
Experimental control Acetone*	747	6	0.800 ± 0.130
Control	581	2	0.340 ± 0.280

*Acetone up to 5 ppm concentration was found to induce no dominant and/or sex-linked recessive lethal mutations.