For a more complete testing program, we also used a chromosomal assay test system. Both larval fed and adult fed flies were used. Adult male flies (0-4 hours old) were starved for four hours, and then allowed to feed for 24 hours on 0.02% trifluralin (v/v) in a 1% sucrose (w/v) solution. The herbicide concentration used is about the LD_{10} dose for adults. Males of the genotype y^2 w^i ct^6 f/sc^8 y^+ Y B^S which survived the feeding were mated with two virgin y/y females for two days each. Live transfer of males was made for five subsequent broods. Progeny of these matings were scored for loss, breakage, and nondisjunction of the X and Y chromosomes. There was no significant difference between the treated and control groups for any of the aberrations scored. However, the actual number of aberrations scored in each category was always higher in the treated group.

A larval fed group of y^2 wi ct^6 f/sc^8 y^+ Y B^S males were mated within 24 hours of eclosion to y/y virgin females, and their progeny scored for aberrations. The results are in Table 1. The rate of XXY nondisjunction (0.12%) in the treated group is significantly different ($P < 0.01$) from that of the control group (0.04%). Data were analyzed according to the tables of Kastenbaum and Bowman.

Table 1. Chromosomal assay - larval feeding

	XXY nondisjunction		X or Y loss		N
	Number	Percent	Number	Percent	
Treated	16**	0.12	22	0.17	13152
Control	11	0.04	46	0.16	28767

** $p < 0.01$

Another aberration recently scored in our laboratory is mosaicism. Larval fed males which produced progeny for the chromosomal assay also produced progeny of the genotype +/B^S, indicating that the long arm of the Y chromosome was broken and lost in one of the mitotic divisions of development. The larval fed treated group had significantly more mosaics than the control group at the 95% level.

In conclusion, although trifluralin does not appear to produce point mutations in microorganisms or Drosophila, it does appear to induce chromosome breakage and nondisjunction in Drosophila. The mechanism of chromosome aberration appears to be spindle apparatus malformation (Lignowski and Scott). In this case, larval feeding of flies was more efficient in demonstrating chromosome aberrations than was adult feeding.

References: Andersen, K.J., E.G. Leighty and M.T. Takahashi 1972, J. Agr. Food. Chem. 20:649-656; Kastenbaum, M.A. and K.O. Bowman 1970, Mutation Res. 9:524-526; Lignowski, E.M. and E.G. Scott 1972, Weed Science 20:267-270; Shirasu, Y. 1975, Environ. Quality Safety 4: 226-231.

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Expression of Antennapedia^{50} in triploid Drosophila melanogaster.

Dominant homozygous lethal homoeotic mutations of Antennapedia (Antp; 3-48.) locus cause transformation of proximal antennal segments into respective leg elements. The allele-specific interaction of Antp alleles with some other homoeotic genes in transforming the antennae (Bulyzhenkov, Ginter and Ivanov, 1975) suggested the mutations to be of missense type; thus the determinative products of mutant as well as of normal alleles should appear in cells of the antennal imaginal discs. In this case, a certain influence might be expected of an extra dose of $Antp^+$ on the phenotypic expression of mutant alleles of this locus. In search for such influence the homoeotic transformation of antennae in triploid flies having in their genotype two doses of normal and a single dose of mutant allele was studied. Triploid females with normal third chromosomes and marked X-chromosomes (z/z/FM7(y w^a lz B); +/+/+) were crossed with diploid FM7/Y; $Antp^{50}$/T(2;3)Xa males. The markers employed allowed us to distinguish between triploids, intersexes, and diploids. In preliminary tests complete penetrance of T(2;3)Xa was shown. To estimate the rate of homoeotic transformation of antennae, the aver-

Table 1. Number of leg bristles on the antennae in $Antp^{50}$ mutants.

	Genotype	No. of flies	Mean ± S.E.
Diploid ♂♂ & ♀♀	XY; $Antp^{50}/+$ XX; $Antp^{50}/+$	60	11.6 ± 1.6
Triploid ♀♀	XXX; $Antp^{50}/+/+$	40	5.6 ± 1.1
Intersexes	XX; $Antp^{50}/+/+$	15	32.3 ± 5.6

age number of leg bristles per pair of antennae was counted. These data are shown in Table 1.

Diploid males did not differ from the diploid females so the data on both could be pooled. In triploid females the number of leg bristles on the antennae was only about half of that in the diploid $Antp^{50}$ heterozygotes. This decrease may be interpreted as a result of the lower $Antp^{50}$ to $Antp^{+}$ ratio in triploids. However, the $Antp^{50}$ to $Antp^{+}$ ratio is hardly the only source of variation in the $Antp^{50}$ expression since in the XX; $Antp^{50}/+/+$ intersexes having the same $Antp^{50}$ to $Antp^{+}$ ratio as the triploid females the rate of antennal transformation is three times as large as that in the diploids and six times greater than in the triploids, thus suggesting the possible role of the balance of X-linked modifiers.

References: Bulyzhenkov, Ginter and Ivanov 1975, Genetika (USSR) 11:27-33.

Calvez, C. Université Claude Bernard Lyon I, Villeurbanne, France. Reduced mitotic activity in anterior and posterior follicle cells of the egg-chamber of Drosophila melanogaster.

The egg-chamber is surrounded by follicle cells derived from mesodermal cells during the migration of 16-cystocyte clusters through germarial region 2 (Brown and King 1964). Each chamber that enters the vitellarium contains approximately 80 follicle cells.

During egg-chamber growth from stage 1 to stage 6 (according to the terminology of King et al. 1956) these cells divide; during stage 6 a maximum number of follicle cells, roughly 1200, is reached and mitosis ceases (King and Vanoucek 1960). Each cell increases thereafter in surface area by a series of about four endopolyploid doublings. During stage 9, however, a group of follicle cells originating at the anterior pole of the egg-chamber migrates through the center of the nurse chamber. These follicle cells squeeze through the nurse cells and reach the surface of the oocyte (King 1970). These border cells thereafter secrete vitelline membrane and later form the micropylar complex.

Follicle cells from the posterior pole of the egg-chamber may also have a specific function and act as oocyte stabilization and growth factors (Koch and King 1969).

The question is whether during the division and differentiation of ovarian follicle epithelium the cells at the two poles have a particular behavior in relation to their particular function. To answer this question [^{3}H] thymidine (25 to 50 pmole per animal) was injected into newly hatched females. Groups of four females were killed, the first one hour after injection and the others daily thereafter until the seventh day.

Seriated sections of ovaries were examined after autoradiography (Calvez 1978).

The percentage of labelled follicle cells and their distribution in the egg-chamber were observed daily. The percentage of labelled border cells was also monitored.

Follicle cells: One hour after injection in all the egg-chambers in the vitellarium (stage 1 to stage 7), 40% to 50% of the follicle cells were labelled. Labelled cells were regularly located around each egg-chamber. During the migration of these chambers through the vitellarium, from day 1 to day 4, the percentage of labelled follicle cells decreased because the radioactive DNA was diluted during the doublings. Labelled follicle cell distribution was irregular. The largest numbers of labelled cells were found at the two poles (photos 1 and 2); density of silver grain labelling was very high in these cells.

Although the [^{3}H] thymidine pool was depleted in 30 minutes (Chandley 1966) a large number of labelled follicle cells appeared in egg-chambers produced from the first to the fourth day. Respective labelling percentages in stages 2 and 3 for these four days were 35%, 35%, 17%, 5%. In these chambers and during their migration the largest numbers of highly labelled cells were also observed at the two poles (photo 3). On and after the fifth day after injection isolated labelled cells were located only in these regions (photos 4 and 5).