Table 1. Malathion resistance of populations after 9 generations.

Population	Tested gener.[a]	Egg-to-pupa-survival (μM)				Adult LC_{50} (μM)[b]
		0	1	2	3	
Non-dysgenic Control	2(1C)	0.88	0.44	0.01	<0.002	10.8 (±1.0)
Non-dysgenic Selected	1(0)	0.17	0.07	0.33	0.21	Not Done
	2(1C)	0.86	0.46	0.36	0.19	11.5 (±0.8)
	2(1M)	0.63	0.64	0.48	0.27	>25
Dysgenic Control	2(1C)	0.91	0.20	<0.01	<0.002	14.1 (±0.8)
Dysgenic Selected	1(0)	0.51	0.61	0.38	0.02	Not Done
	2(1C)	0.73	0.62	0.32	0.08	12.9 (±1.0)
	2(1M)	-----Not Done -----				14.1 (±1.0)

a=After 9 generations (see Fig. 1) flies were allowed to mate among themselves and progeny tested after the number of generations indicated. Thus (0)=selected flies which were directly exposed to insecticide (4 μM for non-dysgenic selected, 3 μM for dysgenic selected) laid eggs onto banana food; (1C)=second generation tested after growth for one generation on banana food; (1M)=2nd generation tested from survivors after growth for one generation on banana food containing 3 μM malathion.
b=Standard error is bracketed.

4 populations and 2 replicates were removed from selection and allowed to mate among themselves for 2 additional generations (grown on either malathion-containing or normal banana food). Eggs and adults were tested for malathion resistance (Table 1).

The following points can be made from this data: (1) the selection populations were polymorphic for resistance as expected since they were being mated each generation to susceptible, unexposed flies. (2) Egg-to-pupa survival increased more rapidly than adult survival (changes in the latter were not significant). (3) Eggs laid by selected flies which had been reared on malathion-containing food survived poorly, even though they were not subsequently exposed to malathion. Egg viability was lower for the non-dysgenic, selected population (17%) than for the dysgenic, selected population (51%), perhaps because the former had been exposed to the greater malathion concentration (4 μM vs 3 μM). Paradoxically, egg survival from non-dysgenic flies was better on 3 or 4 μM malathion than on 0 or 1 μM. (4) After growth on normal food for one generation, egg survival (3 μM) for the non-dysgenic population was greater than that of the dysgenic. (5) LC_{50} values for adults two generations removed from selection were not significantly different (selected vs non-selected); however, if a generation of selection intervened, the non-dysgenic, selected flies were more resistant. These results indicate that the non-dysgenic population responded more rapidly to malathion selection than the dysgenic. Why this should be so is not clear, but the outcome was inconsistent with the hypothesis that insecticide resistance will increase more rapidly for a population in which P-element transposition is active.

References: Kidwell, M.G. 1983, Proc. Nat. Acad. Sci. USA 80:1655-1659; Hickey, D.A. 1982, Genetics 101:519-531; Bregliano, J-C. & M.G. Kidwell 1983, in:Mobile Genetic Elements (Shapiro, ed.), Academic Press, New York, p363-410; Singh, R.S. & R.A. Morton 1981, Can. J. Genet. Cytol. 23:355-368; Holwerda, B.C. & R.A. Morton 1983, Pest. Biochem. Physiol. 20:151-160.

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The influence of parental age to sex ratio on their **Drosophila melanogaster** progenies.

In experimental populations of **D.melanogaster** the influence of parental age to the secondary sex ratio of their progenies has been studied.

In all experiments the males have been individually crossed to a number of virgin females. After 48 hr they were removed and each female was separated to a 20 cc vial where progenies were grown under noncompetitive conditions (13% yeast medium plus agar and sugar, 25°C). Four types of crosses have been made (Table 1). At the beginning of the experiment, young parents were 1-3 days and old ones 21-23 days of age. There were ten replications, but only those where males have inseminated four or more females (4-8) were taken in account. The sex ratios among the progenies of individual females were quite variable. This implies that both sexes are contributing equally to the sex ratio of their progenies.

The influence of parental age has been studied in all crosses (n=142) which have been divided into three groups: (1) Young males were crossed to young (A) and afterwards to old females (B). (2) Young males were crossed to young females (A), and aged together with other females, to be crossed (when more than 20 days old) to young virgin females (C). (3) A separate group of males were aged (together with females) and crossed (when 21-23 days old) to separately aged virgin females (D).

Table 1. Parent age and sex ratio of the progenies.

No. of crosses	Parents	Progenies N	%males	X^2	p
A 54	Young males vs. young females	2171	53.80	12.54	< .01
B 26	Young males vs. old females	1284	47.43	3.39	> .05
C 22	Old males vs. young females	2261	47.50	5.65	< .05
D 40	Old males vs. old females	2945	47.40	7.95	< .01

Table 1 shows that there is a significant excess of male progenies (53.8 ± 1.1%) from the crosses of young males and young females (X^2=12.54; p < 0.01). Among the crosses where males or females, or both, were aged, an excess of female progenies has been found (47.4 ± 0.6%).

The results obtained are showing that parental aging is significantly influencing the sex ratio of their progenies, leading to a significant decrease of male progenies.

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References: Szilard,L. 1959, Proc. U.S. Nat. Acad. Sci. 45:30-45.

Nájera, C. University of Valencia, Spain. Proportion of **D.melanogaster-D.simulans** in natural populations.

Flies from the sibling species **D.melanogaster** and **D.simulans** were captured in three different niches: a cellar in Requena (Valencia), a vineyard at 4 Kms from the cellar, and a pine-wood in La Canada (Valencia) at 70 Kms from the former two, at two different times of the year: sping and autumn.

Males were identified by their genitalia (Sturtevant 1919) while females were identified by the genital differences of their male progeny.

In the collections made inside the cellar at the two times of the year, not one individual of **D.simulans,** neither male nor female, was found. The population was exclusively of **D.melanogaster**. So the cellar provides this last species a system largely free of interactions with its sibling species.

The number of collected flies was 350 females (61.18%) and 187 males (34.82%) in the autumn population and 89 females (54.60%) and 74 males (45.40%) in the spring one. There is therefore a higher number of individuals in autumn (time of the vintage) although the cellar had a more suitable temperature in spring.

As regards the sex ratio, it is always less than one, indicating an excess of females. This excess was particularly marked in autumn (X^2=48.80; P<0.01), since in spring the sex ratio did not differ significantly from unity (X^2=1.2 ns).

In the vineyard and pine-wood populations there is a higher proportion of **D.simulans** than **D.melanogaster**, principally in autumn.

Table 1 shows the number of males and females collected from each of the two sibling species in the four populations as well as the percentage for each sex and the total percentage of each species. The frequencies of inseminated fertile females is also indicated, since it is an important component of the population structure. The percentage of inseminated females of **D.melanogaster** was higher (90.46%) than that of **D.simulans** (78.65%).

With regard to the sex ratio there are significant differences in the autumn vineyard population (X^2=87.34; P<0.01), autumn pine-wood (X^2=8.42; P<0.01), spring vineyard (X^2=3.92; P<0.05), and spring pine-wood (X^2=7.38; P<0.01) for **D.simulans.** For **D.melanogaster,** there are significant differences in the autumn vineyard population (X^2=44.8; P<0.01) and spring vineyard (X^2=6.18; P<0.05), while the differences are not significant in the spring and autumn pine-wood populations (X^2=0.72, X^2=0.06).

Table 1. Number of collected males and females; percentage of inseminated fertile females; total percentage of each species.

	D.SIMULANS						**D.MELANOGASTER**					
	Males		Females		insem.	**% simulans**	Males		Females		insem.	**melano.**
	No.	%	No.	%	% fem.		No.	%	No.	%	% fem.	%
Autumn Vineyard	974	61.80	602	38.20	78.05	88.24	154	73.33	56	26.67	91.07	11.76
Autumn Pine-Wood	391	55.54	313	44.46	81.02	86.27	61	54.46	51	45.54	88.23	13.73
Spring Vineyard	61	41.50	86	58.50	79.27	53.65	49	38.58	78	61.42	89.74	46.35
Spirng Pine-Wood	191	43.41	249	56.59	76.27	75.86	68	48.57	72	51.43	93.06	24.14