Table 1 (contin.):

All Females Combined:

Female w/rare male first, then majority introduced:			Female w/majority male first, then rare introduced:		
w/rare male	62	29.8%	w/rare male	66	31.7%
w/majority male	104	50.0	w/majority male	92	44.2
NM	42	20.2	NM	50	24.1

In sum then, with a constant 2 Common:1 Rare male ratio, and with a total of 324 observed matings after observed courtships, when the females were courted by rare males first, they mated with the rare males 37.3% of the time; when courted by majority type first, they mated with rare males 41.8% of the time. Although increases in rare male advantages occur when majority males courted first, a rare male advantage is still maintained when rare males initially court. In addition, note that both AR and CH females award about the same magnitude of rare male advantage. Results therefore indicate that the type of male which courts first influences the subsequent degree of rare male advantage, at least in these strains.

References: Ehrman, L. & J.Probber 1978, Amer.Scient. 66:216; Ehrman, L., B.Spassky, O.Pavlovsky, & Th.Dobzhansky 1965, Evolution 19:337-346; Meringolo, D.B., R.Silibovsky, & L.Ehrman 1982, in: Genetics, Development and Evolution of Drosophila (ed: S.Lakovarra), Plenum Press; Spiess, D.B. 1982, Behavior Genetics 12:209-221; Spiess, D.B. & W.A.Schwer 1978, Behavior Genetics 8:155-168.

Engeln, H. Institute fur Genetik, Freie Universitat Berlin, FRG. Oviposition site preferences in different populations of Drosophila melanogaster.

As Parsons (1978) pointed out habitat selection plays an important role in the evolutionary strategies of organisms and in influencing their fitness in nature. In this context oviposition site preference is an important behavioural trait and has been studied already by several authors (e.g., McKenzie & Parsons 1972; Richmond & Gerking 1978; Fogleman 1979; Krause et al. 1980). For an optimal survival of larvae it is necessary that Drosophila females choose optimal conditions at oviposition sites. One important factor pointing to the quality of the food composition is the amount of ethanol in it. For example the sibling species Drosophila melanogaster and D.simulans differ in their adaptations to environments containing ethanol and occupy different ecological niches when competing in the same area; D.simulans prefers medium without ethanol and is less tolerant to ethanol than D.melanogaster (McKenzie & Parsons 1972). Since differences between species are existing the question arises whether there are different adaptations within one species concerning ethanol preferences.

Three samples of different Drosophila melanogaster populations were used in this experiment (Table 1). The first one (+K, +T, Da, Ma, Pa) involved laboratory populations collected from places located far away from each other (Europe, Africa, South-America). The second one (UI, UII, MP) consisted of fresh captured populations collected from three habitats within Berlin, Germany. The third group (I1, I23, II5, M4, M19) involved five single female lines derived from the Berlin populations of the second sample.

Fifty 3-4 days old non-virgin females were anaesthetized with carbon dioxide for about 5 seconds and then put into a glass cylinder of 11cm diameter and 5.5cm height. Each cylinder contained 4 food copus (3.5cm diam), two of them filled with standard medium (cornmeal, agar, molasses) and two filled with medium including ethanol of 9% by volume (prepared after McKenzie & Parsons 1972). Because the number of eggs laid per time unit varied between strains, flies were allowed to lay eggs for 1-2.5 hours to receive egg densities that were countable. After this period the flies were removed and eggs were counted. Experiments were carried out at light intensities between 250-650 lux and at a temperature of 25±1°C.

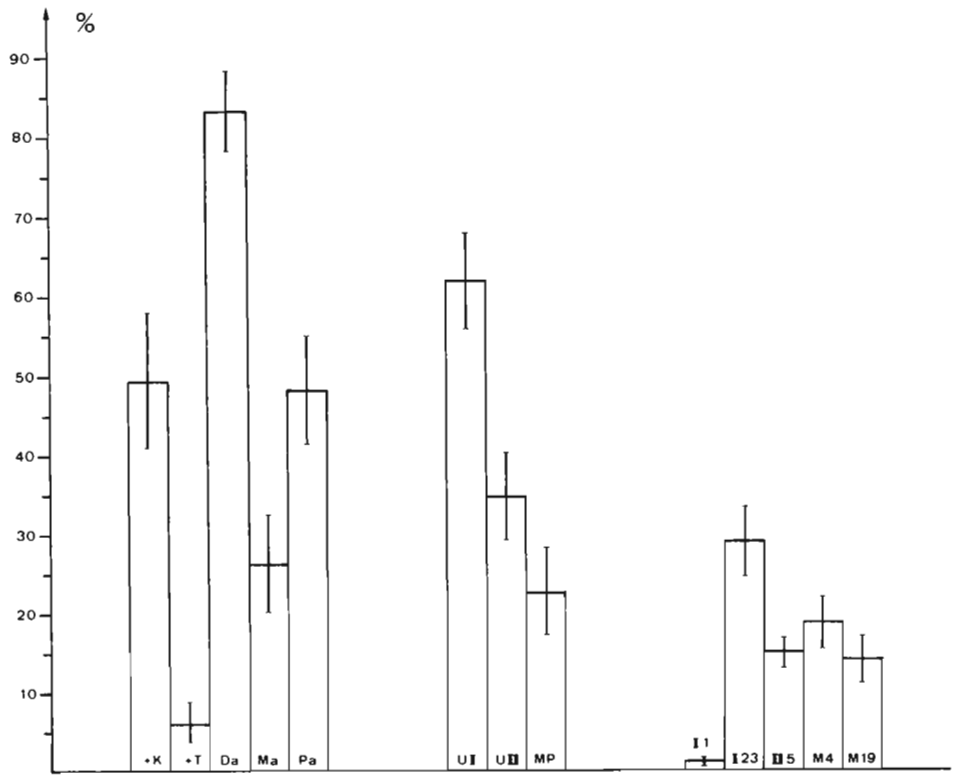
Of each strain the mean percentages of eggs laid on ethanol medium were calculated from 8 replicates each with two glass cylinders. A statistical analysis was performed using the Student-Newman-Keuls-test (SNK-test). The greatest differences exist between laboratory populations originated from places located far away from each other, but there were found also significant differences between populations and between single female lines collected

Table 1. Origin of strains, mean percentages of eggs laid on ethanol medium and homogenous groups by SNK-test.

SNK-test	strain	ethanol(%)	number off eggs	origin, year of capture	
laboratory	+T	5.9	3090	Berlin, Germany	1976
populations	Ma	26.2	3515	La Mancha, Spain	1972
	Pa	48.1	3105	Paramaibo, So.America	1976
	+K	49.2	4076	Berlin, Germany	1930
	Da	83.1	4429	Benin, Africa	1972
fresh	MP	22.7	5924	Berlin-Dahlem	1978
captured	UII	34.8	7646	B.-Wannsee, forest	1978
populations	UI	62.0	7339	B.-Wannsee, garden	1978
single	I1	1.1	3814	UI	
female	M19	14.1	3731	MP	
lines	II5	15.0	2286	UII	
	M4	18.8	5990	MP	
	I23	29.3	7368	UI	

distances: UI-UII 750m; UI-MP 12.5km.

within Berlin (Table 1, Figure 1). There is also considerable variation within strains (see standard error). Krause and coworker (1980) found that females prefer to lay eggs at places being scented by males and del Solar & Palomino (1966) reported that females tend to deposit eggs at sites where eggs are already placed by other females. This could partly explain the differences between replicates within strains.



The great amount of variation between strains was surprising. Richmond & Gerking (1979) obtained preferences for ethanol medium (values >88%) in 4 strains of Drosophila species. McKenzie & Parsons (1972) on the other hand got values of 52% and 54% in two strains of D.melanogaster. Furthermore McKenzie & Parsons (1974) found that populations of D.melanogaster collected in a vineyard were more resistant to ethanol than populations captured outside the vineyard. So it can be concluded that there exists a great amount of variability within the species D.melanogaster concerning oviposition site preferences. As ethanol containing habitats and those without ethanol often will be found in the

Fig. 1. Mean percentages and standard errors of eggs laid on ethanol medium.

neighbourhood, the variability may be a consequence of adaptation to local environment conditions. This suggestion is supported by McKenzie & Parsons (1974) cited above who found that within their vineyard population those strains most closely associated with alcohol in the environment in the cellar were more resistant than strains captured outside the cellar. The considerable difference between the single female lines I1 and I23 derived from the same origin population suggests that there is enough genetic variance within the same population to develop into divergent lines. Single female lines can be viewed as founder populations and a single female being driven to an unoccupied habitat could establish a new population differing in its ethanol preference compared with the origin population. This might be a first step to speciation and so the result of our experiment supports the theory of speciation via founder effect (Mayr 1942; White 1978).

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Falk, R. and S.Baker. The Hebrew University, Jersualem, Israel. Production of centric-autosomal-Y translocations.

The availability of stocks with rearranged autosomes, such that one autosomal arm is attached to its homologue (compound arm) and the other arm is free, e.g., C(2L)/F(2R) and F(2L)/C(2R) stocks, makes the screening for translocations between chromosome-Y and the centric heterochromatin of autosomes (centric autosomal-Y translocations: CAYT) a straight forward procedure. Males with a Y-chromosome marked at both ends ($\underline{B}^S Y^{L\circ} Y^S \underline{y}^+$) and a marked chromosome 2 (dp b cn bw) were irradiated and then mated to females with C(1)DX,yf X-chromosomes and a dominantly inverted marked chromosome-2, In(2LR)CyO, $\underline{dp}^{\ell v1}$ Cy pr cn^2. All y^+ B^S Cy cn^2 daughters were mated either to C(2L)RM/F(2R)bw males or to F(2L)dp/C(2R)RM,cn males. No progeny were expected from the great majority of these daughters, which were C(1)DX,y f/B^SY y^+; CyO/dpb cn bw. Only daughters that carried centric-autosomal translocations with the Y-chromosome--i.e., they were C(1)DX y f/O; CyO/$T_{Y;2}$ $\underline{y}^+$ $\underline{B}^S$ -- or with chromosome-4 were fertile (unless gametes of rare autosomal non-disjuntion in both parents happend to complement each other in the zygote). Since newly induced translocations were expected only rarely, it was not necessary to mate the F_1 females individually, and up to 10 females were mated to the appropriate males in some culture bottles. The results of four translocation-induction experiments are given in Table 1.

Table 1.

Expt. No.	X-ray dose to ♂♂	No. F_1 ♀♀	Translocations recovered with tester: F(2L)dp/C(2R)RM,cn No. ♀♀ tested	F(2L)dp/C(2R)RM,cn fertile cultures	F(2L)dp/C(2R)RM,cn CAYT	C(2L)RM/F(2R),bw No. ♀♀ tested	C(2L)RM/F(2R),bw fertile cultures	C(2L)RM/F(2R),bw CAYT
I	3500R	30	14	1	0	16	1	0
II	3500R	48	25	3	0	23	3	1
III	3000R	930	-	-	-	930	8	5
IV	3000R	2410	2410	16	11	-	-	-

In each experiment about 1000 irradiated males were mated to an excess of females for 6 days in 25 culture bottles. Flies were transferred twice to fresh culture bottles. In Expt. I and II F_1 females were mated individually. In Expt. III most females were mated in groups of 4-10 per culture bottle. In Expt. IV all females were mated in groups of 10 per culture bottle.