In both species there is a disequilibrium in favour of males in autumn, both in the vineyard and in the pine-wood, while in spring the disequilibrium is in the opposite sense; differences are more acute in **D.simulans.**

Reference: Sturtevant, A.H. 1919, Psyche 26:153-155.

Nájera, C. University of Valencia, Spain. Study of eye colour mutant variability in natural populations of **D.melanogaster**. II. Vineyard.

51 and 70 females from two collections captured in a vineyard 4 Kms from the cellar of the preceding work (Ná jera & Mensua 1985, this issue, I. Cellar), at the same times of the year (autumn and spring), were analyzed. The purpose was the same: to search for eye colour mutations by inbreeding through F_1 pair matings from the females collected.

The number of females which were heterozygotic for eye colour mutations was 13 (25.49%) in autumn and 23 (32.85%) in spring. The number of mutations per fly was 0.25 and 0.39. These percentages seem to differ, being higher in spring than in autumn. When compared by means of a t test, no significant differences either with regaard to the heterozygotic females (t = -0.88 ns) or the number of mutations (t = -1.53 ns) can be observed. The distribution of mutations was:

	Autumn	Spring
females with 1 mutation	13	19
females with 2 mutations	0	4

Both fit a Poisson distribution (X^2=0.194 ns, and X^2=0.024 ns).

The percentage of heterozygotic loci for eye colour mutants was 9.8 (autumn population) and 16.07 (spring population).

The overall frequency of allelism was 7.1±4.9 (2/28) for the autumn population, 16.3±2.6 (30/184) for the spring population, and 11.5±2.6 (18/156) interpopulational. Alleles are distributed at random in both populations.

Compared with the cellar populations, the percentage of mutations in heterozygosis was rather smaller in the vineyard. As in the cellar, the frequency of allelism was greater in spring than in autumn, the interpopulational frequency being intermediate.

Nájera,C. and M.C. González-Bosch. University of Valencia, Spain. The maintenance of variability in artificial populations. III. Frequency of ADH alleles.

In a previous work the behaviour of four eye colour **D.melanogaster** mutants from a cellar was studied, compared with their wild allele from the same cellar, in artificial populations, and comparing two culture mediums, one supplemented with alcohol at 10% and the other without alcohol. The four mutants (sepia, safranin, cardinal and a multichromosomal strain which segregated cardinal and cinnabar mutants) attained different gene frequencies at equilibrium: 0.32, 0.27, 0.15 and 0.08 approximately (Najera & Mensua 1983).

In the eight populations there was a higher frequency of heterozygotes than could be expected (Najera 1984), which cannot be explained by the maintenance of inversions in heterozygosis (Najera & de Frutos 1984).

A study of the ADH frequencies was made in the artificial populations as well as in the five strains which gave rise to these populations. Table 1 shows the frequencies for the five strains. It can be observed that all the strains are homozygous: the wild strain and three of the four mutants (sepia, safranin and cardinal) for the F allele and the multichromosomal for the S.

As regards the populations, all the strains maintained in the standard culture medium appeared with polymorphism while the strains maintained in 10% ethanol appeared homozygous for the F allele (Table 2).

Although the initial allelic constitutions of the strains which give origin to the populations is not known, it seems probably that the strains were initially polymorphic, at least the wild strain which is the origin of all the populations, and that in the laboratory they changed to monomorphic through the loss of one of the two alleles.

It is noticeable that in all the populations maintained in the standard culture medium there is polymorphism, while in all the populations maintained with ethanol the F allele has been fixed.

It seems probable that in the populations supplemented with ethanol medium there is a directional selection against the S allele.

Table 1. Frequencies of ADH alleles in strains.

Strains	No.indiv. analyzed	% FF	% FS	% SS
wild	84	100	--	--
sepia	96	100	--	--
safranin	150	100	--	--
cardinal	95	100	--	--
multichromosomal	150	--	--	100

Table 2. Frequencies of ADH alleles in populations.

Populations	No.indiv. analyzed	% FF	% FS	% SS
wild/sepia w/alcoh.	106	100	--	--
wild/sepia w/o alcoh.	87	45	40	15
wild/safr. w/alcoh.	86	100	--	--
wild/safr. w/o alcoh.	80	40	47	13
wild/card. w/alcoh.	85	100	--	--
wild/card. w/o alcoh.	78	32	44	24
wild/multichr. w/alcoh.	141	100	--	--
wild/multichr. w/o alcoh.	96	19	43	38

The four polymorphic populations are in Hardy-Weinberg equilibrium and there is no excess of either homozygotes or heterozygotes in any of them.

In the multichromosomal strain where the In(2L)t was fixed (Najera & de Frutos 1984), the S allele for the ADH is also fixed, therefore there seems to be a linkage disequilibrium between them.

References: Najera, C. & J.L. Mensua 1983, DIS 59:94-95; Najera, C. 1984, DIS 60:154-156; Najera, Ca. & R. deFrutos 1984, DIS 60:156-157.

Nájera, C. and J.L. Ménsua. University of Valencia, Spain. Study of eye colour mutant variability in natural populations of **D.melanogaster**. I. Cellar.

Two samples of **D.melanogaster** were captured at two different times: autumn and spring. The place was a wine cellar in Requena (Valencia). 68 and 80 females, respectively, were analyzed from each collection for the purpose of searching for eye colour mutants. The F_2 of eight pairs from the F_1 generation of each wild female was analyzed.

The number of heterozygotic females for eye colour mutations was 36 (in autumn) and 42 (in spring); so 52.94% and 52.90% of the female populations were carriers of one eye colour mutation in heterozygosis.

The number of total mutations was 42 (in autumn) and 52 (in spring), that is to say 0.61 and 0.65 mutations per fly. Adding the results of both captures, 52.70% of the females were heterozygotic and there were 0.63 mutations per fly in the cellar.

The distribution of mutations inside the populations was as follows:

	Autumn	Spring
females with 1 mutation	28	35
females with 2 mutations	7	4
females with 3 mutations	0	3

both fit a Poisson distribution (X^2=1.935 ns; X^2=4.117 ns) although there is a non-significant lack of individuals without mutations.

Table 1. Frequencies of intra- and interpopulational alleles. No. of alleles in each population and total types of mutations.

	Autumn	Spring	Aut.-Spr.
Analyzed mutations	42	52	
No. of crosses completed	409	497	902
No. of allelic crosses	29	66	90
Freq. of allelic crosses	[7.6±1.4%]	[13.3±1.4%]	[10.0±1.0%]
1 allele	22	12	
2 alleles	5	6	
3 alleles	1	3	
4 alleles	-	1	
7 alleles	1	-	
10 alleles	-	1	
Types of mutations	29	28	

Considering that the loci number reported for eye colour mutations at the moment is about 112, the percentage of heterozygotic loci for eye colour mutants in these populations will be 25.89 (for the autumn population and 25.00 (for the spring population).

Intra e interpopulational allelism tests were carried out. Table 1 shows the results.

The distribution of alleles in both populations was random (X^2=1.800 ns; X^2=4.075 ns) although the dispersion coefficients were too high and there was a tendency to find an excess of lack of alleles on one hand and excessively high number of alleles on the other.