Table 1. Differences in mating success for Drosophila melanogaster flies raised at 20°C (A) and 29°C (B), depending on frequency.

Frequency of type A	# Runs	Matings (♀ x ♂) AxA	AxB	BxA	BxB	r♀	r♂
0.1	6	3	12	26	142	0.82±0.22	3.16±0.66
0.5	6	63	15	59	42	0.77±0.12	3.77±0.62
0.9	6	152	6	19	1	0.98±0.23	3.56±1.39

(1980) this is due to the fact that when males of the more successful strain are rare, they have to compete with only a few other successful males, which would imply one-sided rare male mating advantage in favor of the more successful strain. In a model applying truncation selection (Ewing 1978), it is predicted that rare male mating advantage will occur when strains differ in mating success. In accordance with this prediction rare male mating advantage was found for the strains used by Ewing (1978) when they differed in size, and consequenty in mating success, whether size differences were genotypically or phenotypically determined. It is shown in this paper as well as by the results of Pot et al. (1980), who found no rare male effect for alcoholdehydrogenase variants of Drosophila melanogaster, which differed considerably in mating success, that even a large difference in mating success does not necessarily imply rare male mating advantage.

References: Bryant, E.H. et al. 1980, Genetics 96:975-993; Dal Molin, C. 1979, Amer. Natur. 113:951-954; Ehrman, L. 1966, Anim.Behav. 14:332-339; Ewing, A.W. 1961, Anim.Behav. 9:93-99; Ewing, A.W. 1978, An investigation into selective mechanisms capable of maintaining balanced polymorphisms, PhD Thesis, Porthmouth, Polytechnic; Grant, B. et al. 1980, Evol. 34:983 -992; Pot, W. et al. 1980, Behav.Genet. 10:43-58; Spiess, E.B. 1968, Amer.Natur. 102: 363-379; Spiess, E.B. 1982, Amer.Natur. 119:675-693; Van Delden, W. et al. 1978, Genetics 90:161-191.

Kramers, P.G.N. and H.C.A.Mout. National Institute of Public Health and Environmental Hygiene, Bilthoven, Netherlands.

Use of zeste suppression in a chromosome carrying a white duplication to facilitate the scoring of Minute mutations.

In 1977, Huang published a report on the induction of Minute mutations by MMS and MNNG. He stated that the method, requiring only one generation, would be a favourable alternative to the sex-linked recessive lethal test, for routine testing of chemical compounds. It seems a tedious, job, however, to score objectively small numbers of Minute mutations among large numbers of flies. The study of Persson (1976) showing that several Minutes act as suppressors of zeste in a particular duplication of white suggests the possibility of scoring Minute mutations as eye colour changes. Based on this, we attempted an experiment in which, after treatment with the chemical mutagen methyl methanesulfonate (MMS), F_1 flies were scored for eye colour changes, and afterwards checked for a Minute phenotype.

It appeared to be critical which duplication of white was used. It was observed in a pilot experiment that, among several duplication stocks obtained from the Umea stock center, the "Dp(1:1)w^{rG}, y ac z" (Persson used this indication in his original paper) and the (probably identical) "Dp(1:1)3C1, y ac z" (no. 91) did not show any z suppression effect with several 2nd and 3rd chromosome Minutes, whereas "Dp(1:1)3A6-3C2, y ac z" (no. 90) and "Dp(1:1)3A6-3C2, y^2 ac z" (no. 23) did. For the mutation experiment chromosome no. 90 was selected.

The test scheme used was as follows: Berlin-K male flies were treated with 1 mM MMS for 24 hours, and subsequently mated with virgin females heterozygous for the white duplication chromosome no. 90 and the Basc chromosome. In both the treatment and the control group 20 culture bottles were set up each containing 5 treated males and 10 females. y ac Males (carrying the duplication chromosome) were scored for non-zeste eyes. A normal sex-linked recessive lethal test was run concurrently.

Table 1. Classification of red-eyed males in the 1 mM MMS treatment series (3069 y ac males counted).

	Minute complete	Minute mosaic	Minute$^+$	Total
red eye complete	2	4	1	7
red eye mosaic	-	18	8	26
Total	2	22	9	33 (1.1%)

In the control series, 1283 y ac males were counted, all of which had zeste eyes. In the MMS treated series 3069 y ac males were scored. The results (Table 1) show that in this group a sizeable number of red-eyed males was observed, most of which showed a Minute phenotype as well. Interestingly, the majority were mosaics, having only one red eye or red sectors in one or both eyes, the Minute phenotype often being expressed only by the missing of verticals or aristae. 29 Retests were fertile. Of these, only 2 showed transmission of the red-eyed and Minute phenotypes. Among these was one of the two flies showing the complete phenotype for both red-eye and Minute. The other one was mosaic for both eye colour and Minute. The preponderance of mosaics among MMS-induced mutations is in accordance with date of Lee (1976) on mosaics among induced visibles and with the ratio of mosaic versus complete recessive lethals being relatively high for MMS (Vogel & Natarajan 1979).

The frequency of induced Minutes is quite similar to the rates found by Huang (1977) with MMS at a recessive lethal induction of 16-22%. (This author does not mention the occurrence of mosaics). If the number of Minute loci on chromosomes 2 and 3 is taken as 30-40 (Huang 1977) and the number of loci on the X-chromosome mutable to recessive lethal as 800 (Abrahamson et al. 1980), our figures for induced Minutes (1.1% for all red-eyed males, 0.8% for the red-eyed males also showing Minute) and the simultaneoulsy obtained recessive lethal frequency of 21.4% are not far apart on a per locus basis. This would suggest that indeed most induced Minutes act as suppressors of zeste and can be scored as eye-colour changes.

In conclusion, the principle of scoring Minute mutations by the more objective criterion of the eye-colour change appears to wrok. However, in our experience the test is not likely to take less time than the regular sex-linked recessive lethal test. This applies also when large sample sizes are needed for the detection of weak mutagens. Moreover, performing a brood pattern analysis with individual pairings would be more cumbersome because the numbers of treated males have to be considerably larger than in the case of the recessive lethal test.

References: Abrahamson, S. et al. 1980, Envir.Mutag. 2:447-453; Huang, S.L. 1977, Mutation Res. 44:145-148; Lee, W.R. 1976, in: M.Ashburner & E.Novitski, eds, The Genetics and Biology of Drosophila melanogaster, V.1c:1299-1341; Persson,K. 1976, Hereditas 82:111-120; Vogel, E. & A.T.Natarajan 1979, Mutation Res. 62:51-100.

Krimbas, C.B. and M.Loukas. Agricultural College of Athens, Greece. Further addition to the Greek fauna.

One male of Drosophila subsilvestris was captured in Karpenissi on June 18, 1981, in a collection of 1199 Drosophila flies. It is the first time subsilvestris is recorded in Greece. The male was identified by crosses with virgin females of other European obscura group species: it produced repeatedly offspring only with subsilvestris virgin females. The other flies of this collection were 1169 D.subobscura, 17 D.obscura, 1 D.ambigua, 1 D.helvetica, 3 D.immigrans and 8 D.cameraria. Until now 23 species of Drosophila have been recorded from Greece.