

Diamantopoulou, E. Agricultural College of Athens, Votanikos, Greece. Frequency and allelism of lethals in two natural populations of *D. subobscura* from Greece.

populations have been taken in summer and spring of 1971 respectively. Chromosome O (equivalent to 3R of *D. melanogaster*) has been analyzed by the Va ch cu/Ba balanced strain kindly provided by Dr. D. Sperlich. 145 chromosomes from Parnes and 150 chromosomes from Crete were studied. Also 52 control crosses from Parnes and 66 from Crete were made. The frequency of lethals plus semilethals was  $0.310 \pm 0.038$  in Parnes sample and  $0.227 \pm 0.034$  in the Cretan one. Nearly complete allelism tests of lethals (210 for Parnes and 370 for Crete) show an allelism frequency of  $0.0095 \pm 0.0067$  for Parnes and  $0.0054 \pm 0.0038$  for Crete. The differences of lethal frequencies ( $0.083 \pm 0.051$ ) and of lethal allelism ( $0.0041 \pm .0077$ ) are not statistically different from zero at the 5% probability level. Also the array of viabilities for homozygote chromosomes in the two populations is not statistically different. The correlation between viabilities conferred by chromosomes in homozygous and heterozygous condition has also been computed: it is  $+0.0569 \pm 0.14$  for Parnes and  $+0.0676 \pm 0.12$  for Crete. These correlation coefficients are not different from zero. On the contrary significant negative correlation coefficients ( $-0.421 \pm 0.083$  for Parnes and  $-0.322 \pm 0.076$  for Crete) are found between viabilities of quasinnormal chromosomes and their coefficient of variation (from replicate culture viabilities) suggesting that chromosomes conferring higher viabilities in homozygous condition display greater homeostasis. This is not the case for the heterozygous condition where coefficients of correlation computed do not differ from zero ( $-0.079 \pm 0.137$  for Parnes and  $+0.031 \pm 0.123$  for Crete).

In an attempt to estimate the effective population size the frequency of lethals and the frequency of lethal allelism have been determined in two natural populations of *D. subobscura* from Greece: the Mt. Parnes (Attica) and the one from Alikianou (Crete). Samples of these two

Pinsker, W. and E. Doschek. Institut für allgemeine Biologie, Vienna, Austria. Mating success and visual acuity in *Drosophila subobscura*.

The reproductive ability of *D. subobscura* was tested at different wave lengths of light. Groups of 3 virgin females and 3 males were set up in 15 ccm plastic vials and exposed to green light of 520 nm and to orange light of 570 nm. After a desired time the females were dissected

and examined for the presence of sperm. A wild type strain and the mutant strains "ma" and "cn" were used for these experiments.

The results show that in orange light the mating success is remarkably reduced in "ma" and completely obstructed in "cn", while in wild type the insemination frequency is only lowered at an exposure time of 24 h.

Mating frequency in green and orange light  
(% inseminated females)

Color	Wave length	Exposure time	Strains		
			+	ma	cn
green	520 nm	24 h	87	68	97
orange	570 nm	24 h	36	--	--
		72 h	88	3	0

The lack of eye pigment, which causes a reduction of visual acuity, may be responsible for the impeded mating of the mutant strains in orange light. To prove this assumption, other experiments were made with respect to the optomotor response to moving striped patterns in green and orange light. The instru-

ments for these investigations were provided by the kindness of Dr. Götz in the Max-Planck-Institute für biologische Kybernetik at Tübingen.

The figures can be considered as a measure of the average positive turning reactions.

Optomotor Response

(Rotations of the flies in the direction of the striped patterns within 10 minutes)

Color	Wave length	Strains		
		+	ma	cn
green	520 nm	2.93	0.75	1.35
orange	570 nm	1.40	0.40	0.08

In orange light all 3 strains show a slighter optomotor response than in green light. In "cn", however, the reaction to the stripes seems to be reduced to nothing.

This finding can be compared with the results of the mating tests, in which "cn" also failed to mate in orange light. Therefore it may be concluded that mating success in *D. subobscura* depends on its visual acuity.