Table 1. Summaries of male recombinants in MR assays of treated and control population cages. (All MR assays were carried out by the methods outlined in Woodruff and Thompson, 1977. Total progeny assayed are shown in each column with the number of recombinants in parentheses.)

Week of Sample	Treated Cage #1	Treated Cage #2	Control Cage #1	Control Cage #2
0	1405 (1)	1187 (0)	968 (0)	1911 (0)
8	1173 (0)	1172 (0)	912 (0)	961 (0)
15	954 (3)	1377 (0)	1308 (0)	808 (0)
22	1970 (0)	1954 (0)	--	1503 (0)
27	1148 (1)	925 (2)	667 (3)	1076 (0)
Total	6650 (5)	6615 (2)	3855 (3)	6259 (0)

References: Hellack, J.J., J.N. Thompson, jr., R.C. Woodruff and B.N. Hisey 1978, Experientia 34: 447; Sochacka, J.H.M. and R.C. Woodruff 1976, Nature 262: 287-289; Thompson, J.N., jr., and R.C. Woodruff 1978, Nature: in press; Woodruff, R.C. and J.N. Thompson, jr., 1977, Heredity 38: 291-307. This work was supported by DHEW-NIEHS grant ES01439-03.

Stein, S.P. and E.A. Carlson. State Univ. of New York, Stony Brook. Mosaicism of eye color induced in mature sperm of D. melanogaster.

Males of bw^+;st or bw;st^+ genotype were fed EMS (ethyl methane sulfonate) using an 0.0125M concentration for 24 hours. The procedure for preparation of the mutagen was that of Lewis and Bacher (DIS 43:193). These males were mated with virgin bw;st females. F_1 progeny were examined for eye color mutations reflecting alterations of the bw^+ or st^+ alleles. These appeared in five different patterns whose frequencies are presented in Table 1. The frequency of induced eye color mutation was 0.28% for bw^+ to bw (31/10,928) and 0.13% for st^+ to st (9/6739). Of the 40 mutants obtained, 27 were isolated amorphs (white sectors or eyes) and 13 were hypomorphs (lemon-orange sectors or eyes). One of the 27 amorphs, however, turned lemon-orange about a week after being detected.

Table 1. Patterns of eye color mosaicism

Phenotype	Series I $bw^+ \downarrow bw$	Series I $st^+ \downarrow st$	Series II $bw^+ \downarrow bw$	Total
both eyes full mutant	2	0	4	6
one eye full mutant, one eye normal	2	0	9	11
one eye full mutant, one eye sectored	1	0	2	3
both eyes sectored	1	5	2	8
one eye sectored, one eye normal	7	4	1	12

Each of the 40 eye color mutants was mated to bw;st flies to test for gonadal transmissibility of the induced mutant.

There were 29 mutants which produced 100 or more F_2 progeny. Of these 8 were transmitted mutations, 4 involving a gonadal complete composition and 4 involving a gonadal mosaic composition. The classification of a gonadal mosaic was based on the presence of 80% or more of mutant (white or lemon) gametes. The transmissibility, 28% is similar to that found for dumpy mutations induced by EMS.

The pattern of mosaicism varied, with one eye sectors and one eye full mutants being the most common forms. The use of the bw^+;st or bw;st^+ permitted white or very light eye color sectors to be detected readily. No salt-and-pepper distribution of white and scarlet (or brown) ommatidia were found.

Table 2. Transmissibility of mutations and their relation to parental pattern

Pattern of parental eyes	Non-transmitted	Transmitted
both eyes full mutant	2	2
one eye full mutant, one eye normal	6	1
one eye full mutant, one eye sectored	2	0
both eyes sectored	5	1
one eye sectored, one eye normal	5	4
total	20	8

The induction of single strand lesions in sperm leads to mosaics which tend to remain separated by a left-right symmetry along the anterior-posterior axis. Only a few (8/40 = 0.20) of the mosaics represented mixed distributions of mutant and normal cells to each eye. Table 2 presents the transmitted mutations and their relation to the pattern of mosaicism in the initial mutant parent.

Supported by Biomedical Research Support Grant 431-H114G (USPHS) SUNY Stony Brook.

Tsakas, S. and E. Diamantopoulou-Panopoulou. Agricultural College of Athens. Is the "hidden heat sensitive polymorphism" (crude extract) polymorphism of the structural examined locus in all cases? Experiments with D. subobscura.

132 isogenic lines for the O chromosome extracted from two natural Greek populations, Parnes (P) and Crete (C), were studied. In our samples composed of the crude extract of 12 flies we tested whether the observed heat-sensitive "alleles" were new hidden alleles of the tested loci, A.O, M.E and Xdh, located on the O chromosome.

The main conclusion from this experimental work is that in our tested cases the new hidden heat-sensitive polymorphism doesn't belong solely to the tested locus but is the result of interaction among the "enzymatic products of different loci". The evidence for this is: (a) non-repeatable heat-sensitive phenotypes within some tested strains; (b) the heat-sensitive phenotypes within F_1 crosses didn't give one pattern in most of the tested cases; (c) in single crosses by using null-strains and single fly analysis (new technique applied by us), we did not observe one locus Mendelian segregation within the offspring.

The report of this work has been submitted to the Biochemical Genetics magazine.

Wakimoto, B.T., R.A. Lewis and T.C. Kaufman. Indiana University, Bloomington, Indiana. Genetic analysis of the Antennapedia gene complex: mutant screen of proximal 3R, bands 84A-84B1.

In order to extend our knowledge of the genetic and functional relationships of the members of the Antennapedia gene complex (ANT-C), we have utilized a proximal 3R deficiency chromosome Df(3R)Scr in a mutant screen. This chromosome was generously provided for our use by Dr. D. Sinclair. It is deficient for bands 84A1 through 84B1. Like the previously described Df(3R)Antp^{Ns+R17} (Duncan and Kaufman; Kaufman), Df(3R)Scr is associated with a dominant reduced sex comb phenotype and fails to complement the recessive lethalities of the dominant homoeotics Msc, Antp and Antp^{Scx}. However, Df(3R)Scr extends more proximally than Df(3R)Antp^{Ns+R17} and exposes the proboscipedia (pb) locus. The recovery and characterization of mutants derived from the present screen would establish if the previous screen utilizing Df(3R)Antp^{Ns+R17} had saturated the 84B1,2 region of the ANT-C (see Lewis, R.A., this volume). Furthermore, we could extend the limit imposed by the Df(3R) Antp^{Ns+R17} chromosome to include more proximal regions including the pb locus.

EMS mutations were induced according to the method of Lewis and Bacher. Using a third chromosome marked with red and ebony,,a total of 2,832 chromosomes were screened for visible, lethal and semi-lethal mutations exposed by Df(3R)Scr. The mutants recovered were designated by the letters Ef followed by an identification symbol. Results of inter se complementations are summarized by Fig. 1.