Wright, C.P. Western Carolina University, Cullowhee, North Carolina. Attempts to reverse lethality in some lethal mutants of D. melanogaster by transplanting wild-type fat bodies into lethal larvae.

This investigation involved 17 different lethal mutants of D. melanogaster which were X-ray induced by Novitski (1963). It was found by Novitski that these lethals are non-autonomous, because patches of tissue hemizygous for the lethal genes can survive when present in individuals such as gynandromorphs which also have normal tissue. Presumably some essential chemical substance passes from the normal tissue into the lethal tissue and enables it to develop.

In this work attempts were made to reverse the lethality of whole organisms by supplying presumably missing, essential chemicals to the organism. It was thought that the missing chemicals might be supplied by transplanting fat bodies taken from third-instar, Oregon-R larvae into third-instar, lethal larvae. It is known that insect fat bodies contain many metabolic substances, such as enzymes, which are essential for normal development (Clements, 1959; Kilby, 1963). The method of Ephrussi and Beadle (1936) was used to transplant the fat bodies.

Completely negative results were obtained. The transplanted fat bodies had no noticeable effects on any of the 17 recipient lethals. There are several possible explanations for these results. Perhaps the chemicals which were necessary for normal development could not pass from the wild-type fat bodies to the lethal individuals. On the other hand, perhaps by the third-instar stage of development degeneration of larval tissues had occurred to such an extent that reversal of lethality could not be achieved even if the missing metabolites were supplied.

References: Clements, A.N. 1959 Studies on the metabolism of locust fat body. J. Exptl. Biol. 36: 665-675. Ephrussi, B. and G.W. Beadle 1936 A technique of transplantation for Drosophila. Amer. Nat. 70: 218-225. Kilby, B.A. 1963 The biochemistry of the insect fat body. Advances in Insect Physiology 1: 111-174. Novitski, E. 1963 List of biochemical mutants. DIS 37: 51-53.

Majumdar, S.K. and C. Freedman. Lafayette College, Easton, Pennsylvania. Mutation test of calcium cyclamate in Drosophila melanogaster.

In recent years there has been an increase in the use of cyclamates. For this reason research has been done in connection with possible cytogenetic and mutagenic effects of the artificial sweeteners (Legator et al, 1969; Sax and Sax, 1968) in rats and in onion root tips. On the basis of the results obtained from some of the research the FDA has removed cyclamates from its list of "safe" drugs. No work has been presented thus far on the effects of calcium cyclamate in Drosophila except the work of Sram and Weidenhofferova (1969) who studied the mutagenic effects of saccharin.

The mutagenic activity of calcium cyclamate has been investigated by the Muller-5 technique. The wild flies were raised in instant media containing 1, 3 and 5% calcium cyclamate. The F_1 males from these bottles were tested for the sex-linked recessive lethal mutation. The results are given in the table:

Concentrations %	No. Chromosomes Tested	No. Lethals	Mutation Rate %
Control	1530	1	.06
1% Calcium Cyclamate	1120	1	.09
3% Calcium Cyclamate	1222	2	.16
5% Calcium Cyclamate	1280	9	.70

Sram and Weidenhofferova (1969) found a mutation rate of 2.83% using 5 mM concentration of saccharin. These results show that calcium cyclamate has the ability to produce mutation in Drosophila melanogaster wild flies. Further studies are in progress.

The assistance of Mr. Jack Carty is gratefully acknowledged.

References: Legator, M.S., K.A. Palmer, S. Green, and K.W. Peterson, 1969 Science 163: 1139. Sax, K. and H.J. Sax 1968 Jap. J. Genet. 43: 89. Sram, R. and H. Weidenhofferova 1969 DIS 44: 120.