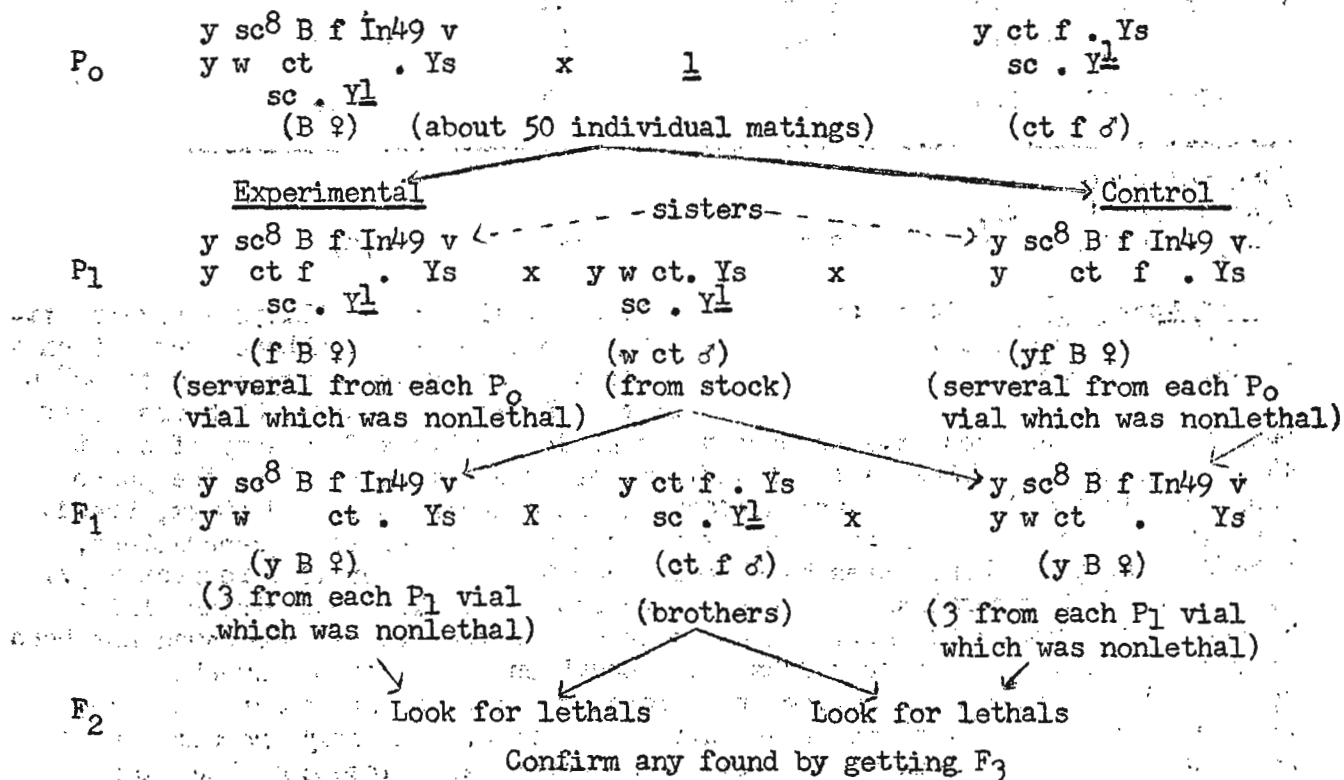


Spontaneous recessive lethals were looked for in a particular X chromosome ($y\ sc^8\ B\ f\ In49\ v$) among the progeny of females having this X and either having (experimental series) or not having (control series) an extra Y chromosome. The control and experimental females of the generation (called P_1) which was tested for its spontaneous mutation frequency were sibs of each other and did not differ genetically from each other in any systematic way except by the presence or absence of a $sc.Y^1$ chromosome (recognized by their being non-yellow or yellow). The crosses of flies, called P_0 (see the figure), that produced these P_1 females were designed in such a way as to make possible the elimination of all pre-existing lethals, to equalize the experimentals and controls by randomization of the autosomes, to make each of the many experimental and control lines isogenic with one another for the two X chromosomes (in the P_1 generation, in which lethals occurred), and to allow identification, in each generation, of all female combinations of X's and Y's, whether formed by disjunction or by nondisjunction. Since disjunctionally produced males from the crosses could have either one or two Y chromosomes, the male parents in each generation (except the last, where this did not matter) were taken from attached-X stocks.

We tested 3864 experimental and 3864 control chromosomes. In the former, 12 lethals (.31%), and in the latter 13 lethals (.33%) were observed. Thus we conclude that, in females at least, extra heterochromatin does not influence the spontaneous lethal mutation rate.

Crossing scheme used in lethal experiment. Phenotypes in parentheses.



von Brandt, H., and Höhne, G.
Mutagenic action of some
chemicals.

The following compounds have been tested
for mutagenic action in D. melanogaster:
(a) ethylurethane, dissolved in .96 KCL,
(b) tri-(2-chlorethyl)amin, dissolved in
citric acid and 0.96% KCL, (c) p-dimethylaminoazobenzene, dissolved in sesame

oil, (d) 2-methyl-1,4-naphthohydroquinone, dissolved in 0.96% KCl, and (e) 4,4-stibendicarboxamidine, dissolved in 0.96% KCl. In all experiments sub-lethal doses of the chemicals were administered by means of injection of imagines, except that in (c) we also exposed imagines to a sesame oil aerosol. The wild-type males treated (Berlin-wild) were tested for sex-linked recessive lethals by the ClB or Muller-5 method. The mutation rates of the control groups (treated only with KCl, NaCl, citric acid, or sesame oil) varied from 0.2 to 0.5%. The following table shows the results. Apart from the well known mutagenic agents ethylurethane and tri-(2-chlorethyl)amin, there were no significant increases in frequency of lethals after treatment with (c), (d), and (e).

Compound tested	No. chromosomes tested	No. lethals	% lethals
(a) Injection - 0.3%	1394	22	1.58
(b) Injection - 0.10	172	3	1.74
- 0.03	353	19	5.38
- 0.01	1189	38	3.20
(c) Injection - 2.3%	3220	22	0.68
Aerosol - 2.3%	2298	4	0.13
48 hours			
(d) Injection - 1.0%	1496	4	0.27
- 0.01%	1245	10	0.80
(e) Injection - 1.0%	662	4	0.60
Control group (injection of NaCl, NCl, or citric acid)	3741	14	0.37

Waddington, C. H. Selection of the genetic basis of an acquired character.

Developing flies of a wild-type strain originally collected in Edinburgh were given temperature shock by being placed at 40° for four hours at about 21-23 hours after

pupation. A crossveinless phenocopy was produced with a frequency of about 40%. One selected line was started from the crossveinless flies, the phenocopies being bred from in each generation; in a second selected stock, breeding was from those which did not show the phenocopy. After 15 generations, the frequency of phenocopies had become over 90% and under 16%, respectively. In the twelfth generation of the upward-selected stock, crossveinless flies appeared even among the individuals to which the temperature shock had not been given. When these were bred from, the condition was certainly inherited, probably by a gene of incomplete penetrance whose behavior has not yet been fully worked out. Thus the crossveinless condition, initially produced as a response to an environmental stimulus, has during the course of selection picked up a genetic basis which enables it to appear in the absence of the stimulus.

Wallace, Bruce, and Demerec, Rada A test for translocation mosaics in *Drosophila* sperm exposed to nitrogen mustard aerosol.

In a recent article (B. Wallace, Dominant lethals and sex-linked lethals induced by nitrogen mustard. *Genetics* 36: 364-373, 1951) it was suggested that the genetic test for translocations (y; bw; e) may be